Belshaw

Convection Ovens

Model BXC Smartbake
4-Tray & 10-Tray

Belshaw Bros., Inc.
1750 22nd Ave. S.
Seattle, WA 98144
Phone: 206-322-5474 • Fax: 206-322-5425
Toll Free: 1-800-578-2547
E-mail: service@belshaw.com
http://www.belshaw.com

If you accept the machine from the shipping company, you are, in effect, saying that the machine is in good condition, and you must pay for the machine. Belshaw cannot pay for shipping damage, because the freight company has accepted the machine from Belshaw in good condition, and is responsible for its safe delivery. For your protection, inspect the machine to see that no parts are bent, scratched, or otherwise damaged. If any damage has occurred in shipping, file a freight claim with the shipping company immediately.

WARNING

Keep this manual available at all times for use.

EQUIPMENT RECORD

Please provide the information below when you correspond with us about your machine.

Purchased by _____

Installed by _____

Date of Installation _____

Model number _____

Serial number _____

0303

MN-1881EN

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Limited Warranty Insert

Preface

The Belshaw BX Smartbake convection oven is a computerized, compact, electric oven with a capacity for either four or 10 trays. Each tray is 26” x 18”.

The convection oven is made of stainless steel and is fitted with a removable tray rack, allowing easy cleaning of its internal surfaces.

The 4-tray oven is designed to be stackable without separate support, allowing the system to grow with your business without taking up a large area.

The 10-tray oven is equipped with an integral, energy efficient steam system. A double glazed door also helps to increase energy efficiency, and the oven base is supplied with locking castors.

The high-speed fan and ring element provides efficient air circulation, helping produce a range of high-quality products.

To help ensure safe and efficient operation of the oven, the operator must work safely at all times, read this manual, and follow its instructions and warnings. A thorough understanding of how to install, maintain, and safely operate the convection oven will help prevent production delays and injuries.

To use the convection oven safely, heed the following warnings and all other warnings that appear in this manual.

- Use the oven only for baking bread, confectionery, and savory products. Do not use for any other items without consulting Belshaw.
- All repairs and maintenance of electrical units must be done by authorized electricians.
- Electrical access panels must not be opened unless the main supply to the oven is isolated.
- Any chimneys or ducts fitted above the ovens should be insulated.
- All connections must be made in accordance with the regulations of the country where the oven is installed.
- Do not touch the oven, its windows, or immediate surroundings during or shortly after use, as these surfaces may be hot.
- Use only Belshaw parts in this oven.
- Do not change the construction of this oven.
- The owner of the oven is legally obligated to instruct staff using the oven in its operation and in these safety regulations. The instructions must stay in the oven’s working area.
- This oven uses a steam generator. Hard water must be properly treated before use.

Installation 1

Unpacking the oven

1. Move the crate containing the oven to the workstation.
2. Remove the machine from the shipping crate, being careful not to lose, loosen or damage any parts.
3. Remove all packing materials from the machine.
4. Inspect the machine to see that no parts have been damaged during shipping. If any damage has occurred, file a freight claim with the shipping company immediately.

IMPORTANT
Keep this manual available for future reference.

Dimensions and Specifications

	2618 4 tray oven	**2618 10 tray oven**
Height	21 inches	74 inches
Depth, door closed, including handle	44 inches	53.5 inches
Width	33.5 inches	33.5 inches
Operational clearance*	2” back and sides, 10” top	2” back and sides, 10” top
Total power	7. 5 kW	17 kW
Electric	220 V, 3-phase + N + E, 60Hz, fused at 35A	208 V, 3-phase +N + E, 60Hz, fused at 45A
Supply cable	6 feet of cable provided	6 feet of cable provided
Loading	7 kW ring element	16 kW (2 - 8 kW concentric ring)
Fan drive	Direct to motor	Direct to motor
Tray size	26” x 18”	26” x 18”
Tray capacity	4	5, 9, or 10
Damper	Butterfly type	Butterfly type
Noise level	Less than 85 dB	Less than 85 dB

* Operational clearance is the amount of space required at the back, sides, and top of the oven to allow adequate air circulation.

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Water Supply

- The BX Smartbake oven is fitted with a steam generator. In areas with hard water, the water supply to the oven must be treated with an appropriate protecting water treatment device. It is the sole responsibility of the customer to provide and maintain an appropriate water treatment system.
- For stacked ovens, the water supply should be shut off by closing the shut-off valves. (See Figure 1-1)
- For non-stacked ovens, the water supply should be shut off at the nearest shut-off point.

The BX Smartbake oven needs the following for the water supply:

- ¾" BSP female thread on the oven.
- 3 foot-long hose with ¾" B.S.P. female fittings at both ends (included)
- Inline stop cock (customer must provide and fit)
- 15-60 p.s.i. water pressure

Installation

The BX oven should be connected to a local means of isolation.

- To stop the oven in an emergency, switch off at the wall isolator.

Initial Cleaning

Carefully wipe the interior of the oven and all accessories with a clean cloth soaked in warm soapy water and allow the oven to dry completely.

IMPORTANT

When cleaning the inside of the 4-tray oven, be careful not to damage the control probe protruding from the upper corner of the chamber's rear wall.

WARNING

Do not allow water to enter the control panel or rear access panel.

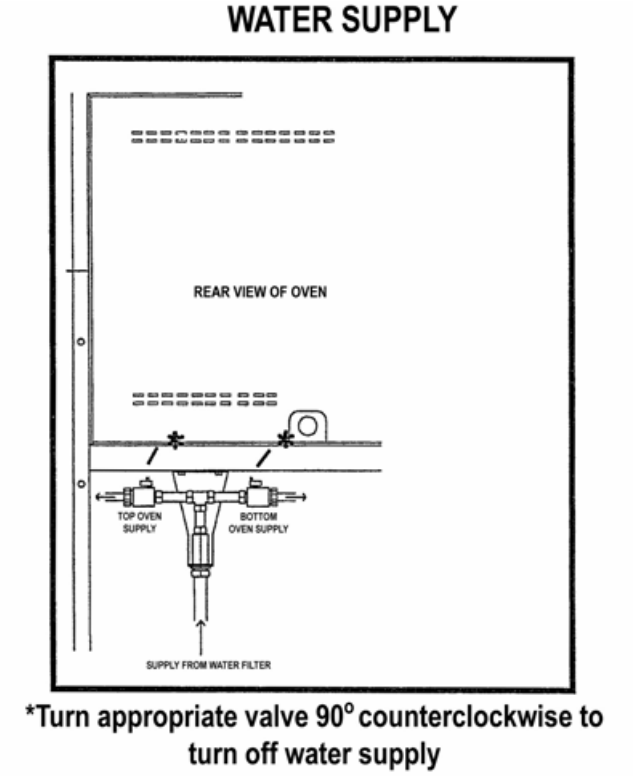

WATER SUPPLY
REAR VIEW OF OVEN
TOP OVEN SUPPLY
BOTTOM OVEN SUPPLY
SUPPLY FROM WATER FILTER
*Turn appropriate valve 90° counterclockwise to turn off water supply

Figure 1-1. Turning off the water supply.

Programming the control panel

The BX Smartbake oven is capable of storing several preset bake settings. To program these settings into the oven, follow these instructions.

1. Press the Stop button to get to the first screen (see Figure 1-2).

Figure 1-2

2. Press button 2 for the pass code screen (see Figure 1-3).

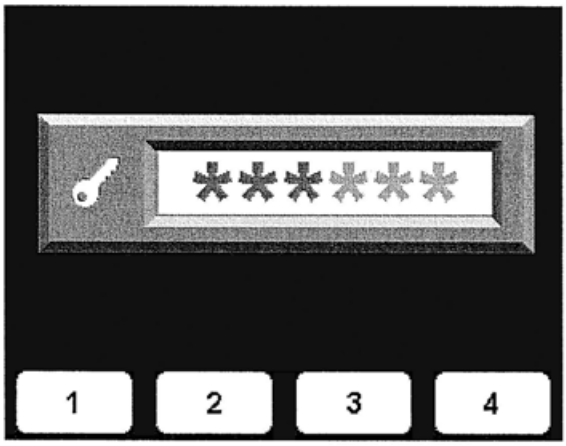


Figure 1-3

3. Enter the pass code using the numbered buttons (default is 111111). The following screen will appear (see Figure 1-4).

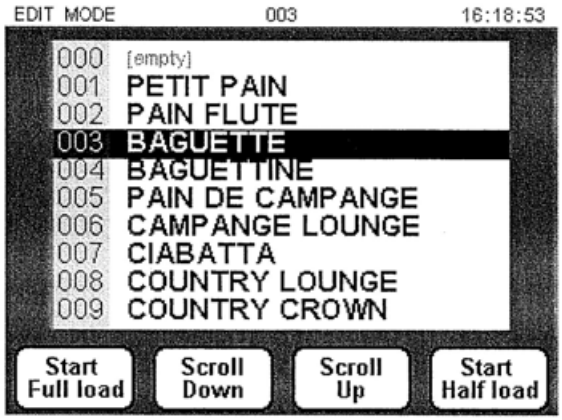


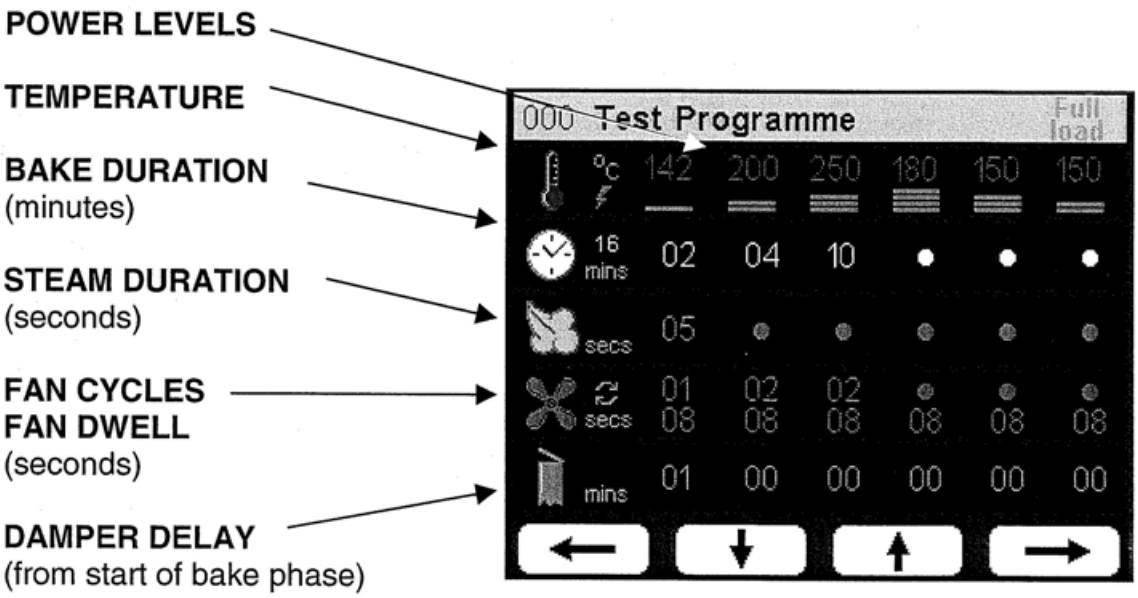
Figure 1-4

4. Press button 1 for full bake set-up or button 4 for ½ bake set-up. All parameters for the program can now be set.

5. The oven is capable of six different phases per bake, and if fewer are required, the time can be left at 0 to leave that phase inoperative.
    - To move across the screen, press button 4.
    - To move back, press button 1.
    - To increase the value of the parameter, press button 3.
    - To decrease the value of the parameter, press button 2.

6. Program Title: To set the program title, press button 6 to go up the alphabet and button 5 to go down the alphabet.

When all parameters are complete, press Stop three times to save the setting. Repeat this process for each program required.



Operation 2

Operating conditions

For the most efficient operation, the following instructions must be followed. Failure to comply with these guidelines may affect the warranty.

- The ambient temperature around the oven must not exceed 115° F (40° C).
- The ventilation around the oven should be enough to ensure that there is no condensation on or around the oven from steam.
- It is the customer's responsibility to arrange for adequate ventilation and operational clearance at the back and sides of the oven to allow circulation of air.

Running Pre-set programs

1. Connect water ensuring there are no leaks.
2. Connect the power to a suitable outlet.
3. Turn on the oven by pressing the green button and the following screen will appear (Figure 2-1):

Figure 2-1

4. Press Button 4 (which corresponds to the "select product" option in Figure 2-1) and the program list will appear (Figure 2-2). If the oven has not been programmed, see the section on programming on page 3.

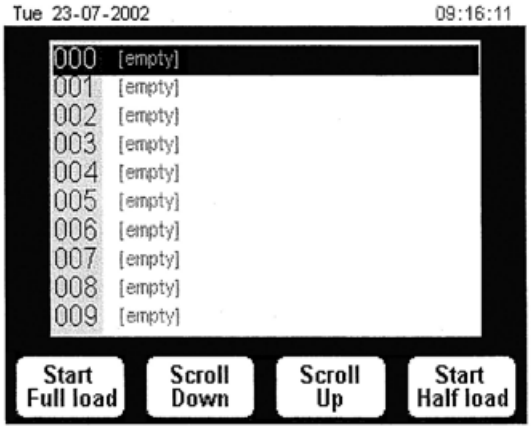


Figure 2-2

5. Highlight the desired program by pressing buttons 2, 3, 5, or 6 to scroll down, up, 10 down, or 10 up, respectively.
6. Start heating the oven by pressing button 4 for a ½ load bake or button 1 for a full load bake. The following screen will appear (Figure 2-3). To stop heating, press the stop/Back button at any time.

Figure 2-3

WARNING
Stand clear of the oven door when opening to avoid the hot steam and vapor. Hot steam or vapor may cause severe burns.

WARNING
Always preheat the oven to required temperature. Do not place product directly into a cold oven.

7. When the oven is ready, the following screen will appear (Figure 2-4). Load the product and press the button corresponding to the Start option (button 4).

Figure 2-4

8. When the bake time is over, the buzzer will sound and the screen will read "Bake Over" (Figure 2-5). Press stop and remove the product or press button 4 to extend the bake time by two minutes. The Stop button may be pressed at any time to stop the bake.

Figure 2-5

9. Upon pressing the Stop button, the screen will revert to the program screen (Figure 2-2).
10. To bake in a preheated oven, select a new program with keys 2 and 3. Then follow instructions 6-8.

NOTE
During heating, button 1 can be pressed at any time to check the settings. Press button 1 again or wait 10 seconds to return to the previous screen.

NOTE
Until the oven is up to the target temperature, the display will show "Heating;" then the display will show "Ready" and the oven will stay at the target temperature until baking starts or another program is selected.

Cleaning and Maintenance 3

Daily Cleaning

1. Isolate the oven from main power supply and allow to cool completely before cleaning.
2. Use only approved chloride-free cleaning fluid for daily cleaning.
3. Sweep any debris (after the oven has been allowed to cool) onto removable oven trays and remove for cleaning.
4. Brush down and wipe oven front, back, and sides.
5. Carefully clean the oven with a damp cloth that has been soaked in a solution of mild detergent and hot water, being extra careful around control switches. In the 4-tray oven, be sure the control probe protruding from the upper rear corner inside the oven is not damaged (see page 9).
6. Do not let any liquid enter the control panel or rear access panel.
7. Do not remove the rear paneling inside the oven. This allows access to the fan assembly, which is not safety interlocked and could cause injury.
8. Dry completely.

Weekly Cleaning

1. Complete the daily cleaning.
2. Carefully clean off any burnt-on debris using an appropriate oven cleaner, following the manufacturer's instructions. **Do not allow the oven cleaner to get in the control panel.**
3. Scrub the cabinet wheels (if fitted) with a mild detergent and hot water, using a nylon cleaning brush.
4. Open the oven door and remove the internal racking from the sides of the oven by lifting and unlatching the racking. This allows access to hidden areas in the oven, which can be wiped with a damp cloth.
5. Open the inner door glass by removing two screws shown in Figure 3-1. The glass is hinged to allow a more thorough cleaning.

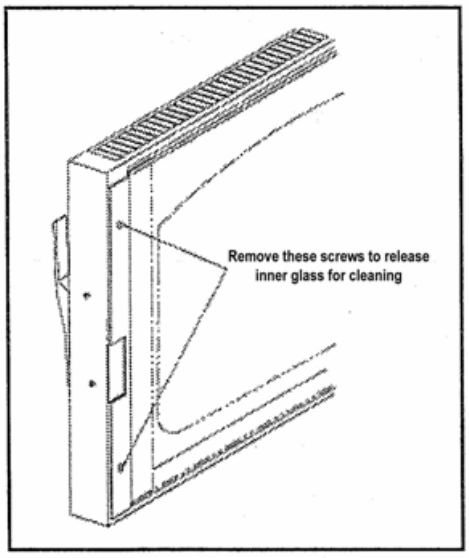


Figure 3-1. Removing the inner door glass.

6. Clean the glass with a suitable glass cleaner.
7. Wipe down the oven and clean the racking with a damp cloth.
8. Reassemble all parts back in the oven after cleaning.

WARNING
In the 4-tray oven, do not damage the control probe protruding from the upper corner of the inside rear wall of the oven chamber.

WARNING
Make sure water does not enter the control panel or rear access panel.

WARNING
Do not remove the rear paneling inside the oven. This allows access to the fan assembly and could cause injury.

Maintenance

- Check for frayed or bare cables. The machine must not be used if there are frayed or bare cables.
- Follow cleaning instructions exactly.
- Check condition of the rubber door seal. Repair or replace if necessary.
- If the light bulb burns out, use the following instructions to replace it.
    a. Isolate the oven from the main power supply and allow to cool.
    b. Remove the glass front from the lamp unit.
    c. Remove the bulb by unscrewing counterclockwise and replace with a new bulb.
    d. Refit the glass front.
    e. Reconnect the oven to the main power supply and test the lights.
- If the steaming operation deteriorates, clean the pipe aperture with a pin to remove any build-up.

Lubrication

This machine does not require special lubrication.

TEMPERATURE PROBE
VIEW LOOKING INSIDE OVEN CHAMBER
(WITH RUNNERS REMOVED)
TEMPERATURE PROBE
IMPORTANT WARNING!
CARE MUST BE TAKEN WHEN CLEANING AROUND THE TEMPERATURE PROBE.
(IF ANY DAMAGE OCCURS TO THE TEMPERATURE PROBE
IT MUST BE REPLACED BEFORE ANY FURTHER COOKING OPERATIONS)
IF YOU HAVE ANY QUESTIONS - ASK
REV
SIG
DATE
REVISION
ECN NO.
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Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
BX CLEANING INSTRUCTIONS
(SHOWING THERMOCOUPLE PROBE POSITION)
ELECTRICAL SPECIFICATIONS:-
DRAWN:
S.P.
ELECTRICALLY APPROVED BY:-
-
DATE:
21-2-98
DRAWING NO.
ME791
REV:
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Troubleshooting 4

The following pages contain troubleshooting/ fault analysis charts for the Classic convection oven.

Diagrams 5

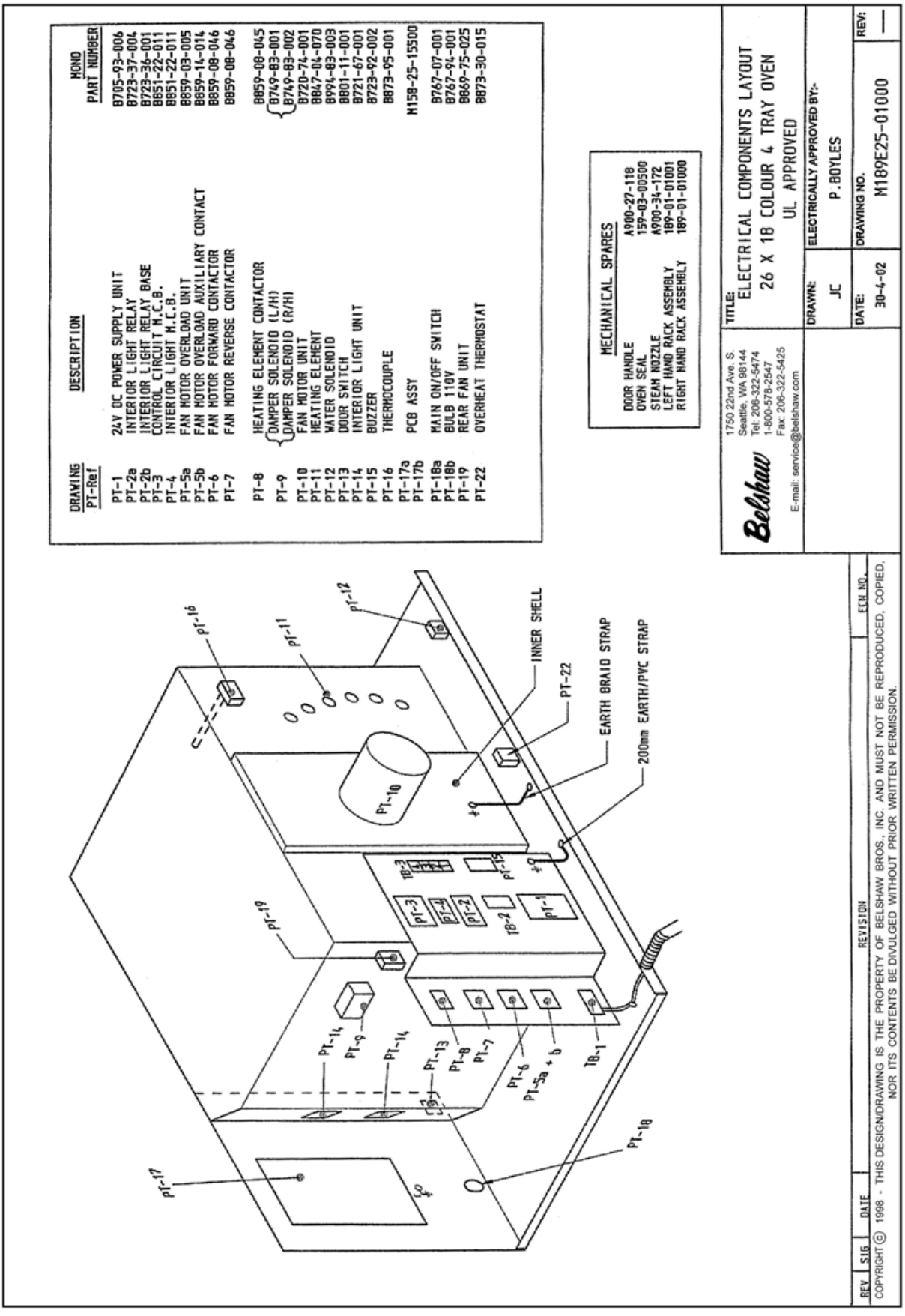
This section contains diagrams detailing the electrical components of the 4-tray and 10-tray BXC convection ovens.

4-tray BXC Oven (starts on page 30)

- Electrical Components, M189E25-01000
- PCB Connections, M158E25-21000
- PCB Outputs, M189E25-01100
- Power Circuit Diagram, M189E25-00100
- Control Circuit & 24V DC Power Supply, M189E25-00400
- Fan Motor Connections & Heating Element Wiring, M189E25-00500

10-tray BXC Oven (starts on page 37)

- Electrical Components, M150E25-55000
- Main Control Panel Layout, M150E25-20200
- PCB Connections, M150E25-51400
- PCB Outputs, M150E25-20400
- Interior Light & Power Supply Circuit, M150E25-20500
- Motor Power Circuit Diagram, M150E25-20600
- Heating Power Circuit Diagram, M150E25-20700
- Fan Motor Connections & Heating Element Wiring, M150E25-20300


DRAWING PT-Ref
DESCRIPTION
MONO PART NUMBER
PT-1 24V DC POWER SUPPLY UNIT B705-93-006
PT-2a INTERIOR LIGHT RELAY B723-37-004
PT-2b INTERIOR LIGHT RELAY BASE B723-36-001
PT-3 CONTROL CIRCUIT M.C.B. B851-22-011
PT-4 INTERIOR LIGHT M.C.B. B851-22-011
PT-5a FAN MOTOR OVERLOAD UNIT B859-03-005
PT-5b FAN MOTOR OVERLOAD AUXILIARY CONTACT B859-14-014
PT-6 FAN MOTOR FORWARD CONTACTOR B859-08-046
PT-7 FAN MOTOR REVERSE CONTACTOR B859-08-046
PT-8 HEATING ELEMENT CONTACTOR B859-08-045
PT-9 DAMPER SOLENOID (L/H) B749-83-001
DAMPER SOLENOID (R/H) B749-83-002
PT-10 FAN MOTOR UNIT B720-74-001
PT-11 HEATING ELEMENT B847-04-070
PT-12 WATER SOLENOID B994-83-003
PT-13 DOOR SWITCH B801-11-001
PT-14 INTERIOR LIGHT UNIT B721-67-001
PT-15 BUZZER B723-92-002
PT-16 THERMOCOUPLE B873-95-001
PT-17a PCB ASSY M159-25-15500
PT-17b
PT-18a MAIN ON/OFF SWITCH B767-07-001
PT-18b BULB 110V B767-94-001
PT-19 REAR FAN UNIT B869-75-025
PT-22 OVERHEAT THERMOSTAT B873-30-015
MECHANICAL SPARES
DOOR HANDLE A900-27-118
OVEN SEAL 159-03-00500
STEAM NOZZLE A900-34-172
LEFT HAND RACK ASSEMBLY 189-01-01001
RIGHT HAND RACK ASSEMBLY 189-01-01000
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Tel: 206-322-5474
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Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE: ELECTRICAL COMPONENTS LAYOUT 26 X 18 COLOUR 4 TRAY OVEN UL APPROVED
DRAWN: JC
ELECTRICALLY APPROVED BY:- P.BOYLES
DATE: 30-4-02
DRAWING NO. M189E25-01000
REV: —
REV SIG DATE REVISION ECN NO.
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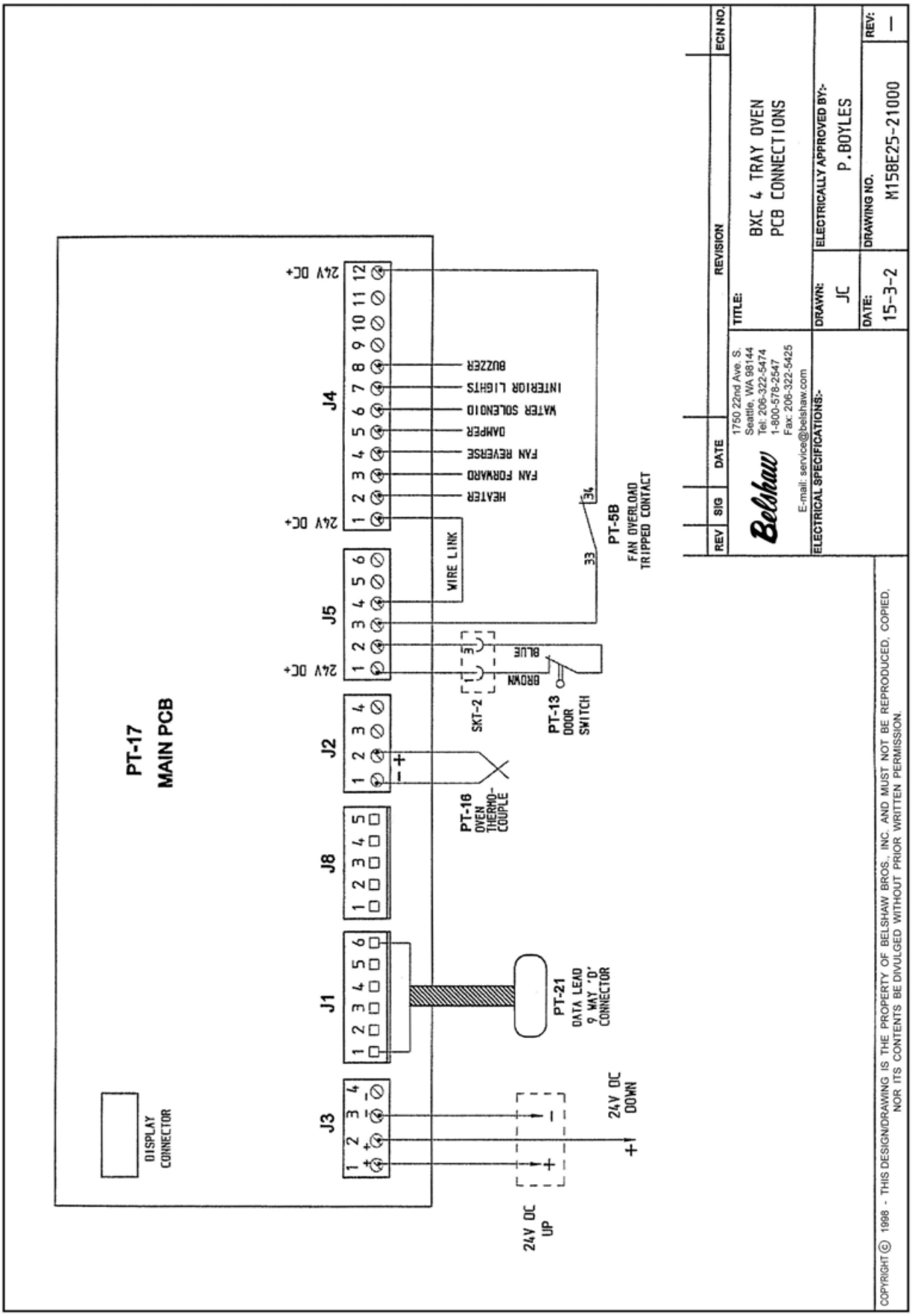
INNER SHELL
PT-22
EARTH BRAID STRAP
200mm EARTH/PVC STRAP
PT-16
PT-11
PT-12
PT-10
PT-19
PT-3
PT-1
PT-2
TB-2
TB-3
PT-15
PT-14
PT-9
PT-13
PT-8
PT-7
PT-6
PT-5a + b
TB-1
PT-17
PT-18


PT-17
MAIN PCB
DISPLAY CONNECTOR
J3
J1
J8
J2
J5
J4
24V DC+
24V DC+
24V DC+
HEATER
FAN FORWARD
FAN REVERSE
DAMPER
WATER SOLENOID
INTERIOR LIGHTS
BUZZER
WIRE LINK
PT-5B
FAN OVERLOAD
TRIPPED CONTACT
33
34
BROWN
BLUE
SKT-2
PT-13
DOOR
SWITCH
PT-16
OVEN
THERMO-
COUPLE
PT-21
DATA LEAD
9 WAY 'D'
CONNECTOR
24V DC
UP
24V DC
DOWN
REV
SIG
DATE
REVISION
ECN NO.
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1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
BXC 4 TRAY OVEN
PCB CONNECTIONS
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
15-3-2
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M158E25-21000
REV:
—
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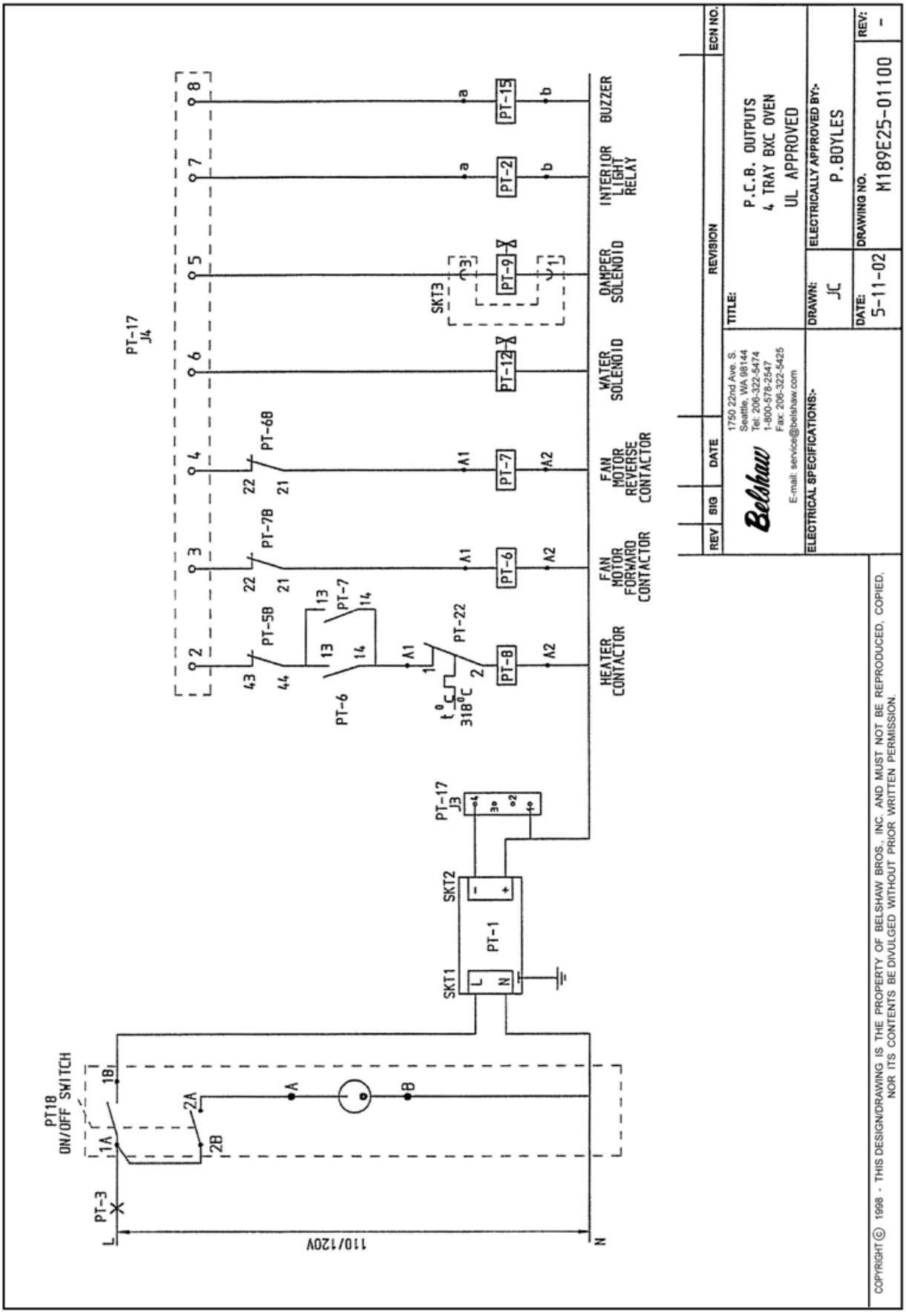
PT18
ON/OFF SWITCH
PT-3
L
N
110/120V
1A
1B
2A
2B
A
B
SKT1
L
N
PT-1
SKT2
PT-17
J3
PT-17
J4
PT-5B
PT-6
PT-7
PT-22
318°C
PT-6B
PT-7B
PT-8
PT-6
PT-7
PT-12
PT-9
PT-2
PT-15
HEATER CONTACTOR
FAN MOTOR FORWARD CONTACTOR
FAN MOTOR REVERSE CONTACTOR
WATER SOLENOID
DAMPER SOLENOID
INTERIOR LIGHT RELAY
BUZZER
REV
BIG
DATE
REVISION
ECN NO.
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Seattle, WA 98144
Tel: 206-322-5474
1-800-676-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
P.C.B. OUTPUTS
4 TRAY BXC OVEN
UL APPROVED
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
5-11-02
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M189E25-01100
REV:
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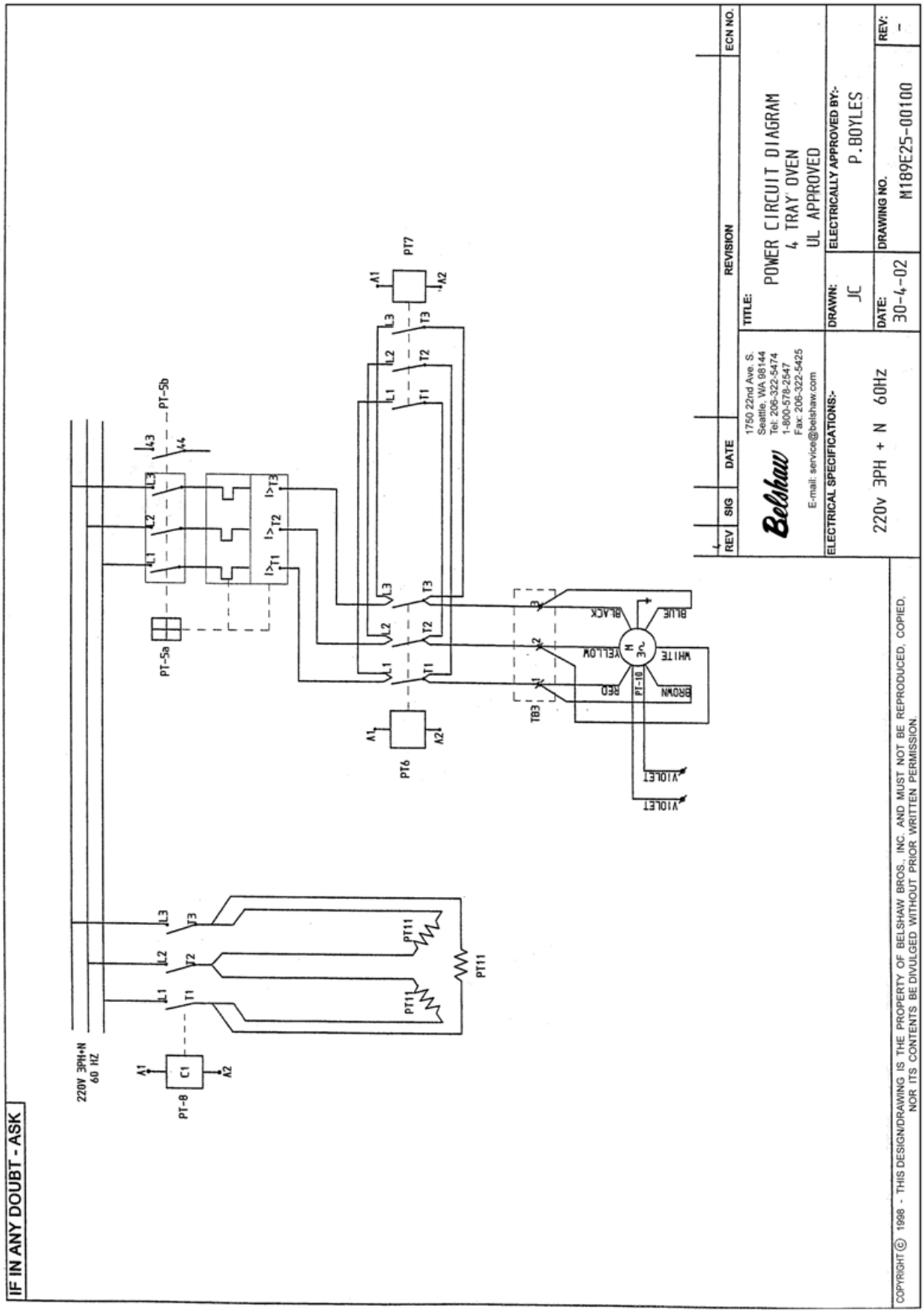
IF IN ANY DOUBT - ASK
220V 3PH+N 60 HZ
PT-8
PT-5a
PT-5b
PT6
PT7
PT11
TB3
PT-10
BLACK
BLUE
YELLOW
WHITE
BROWN
RED
VIOLET
REV
SIG
DATE
REVISION
ECN NO.
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Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
POWER CIRCUIT DIAGRAM
4 TRAY OVEN
UL APPROVED
ELECTRICAL SPECIFICATIONS:-
220v 3PH + N 60Hz
DRAWN:
JC
ELECTRICALLY APPROVED BY:-
P.BOYLES
DATE:
30-4-02
DRAWING NO.
M189E25-00100
REV:
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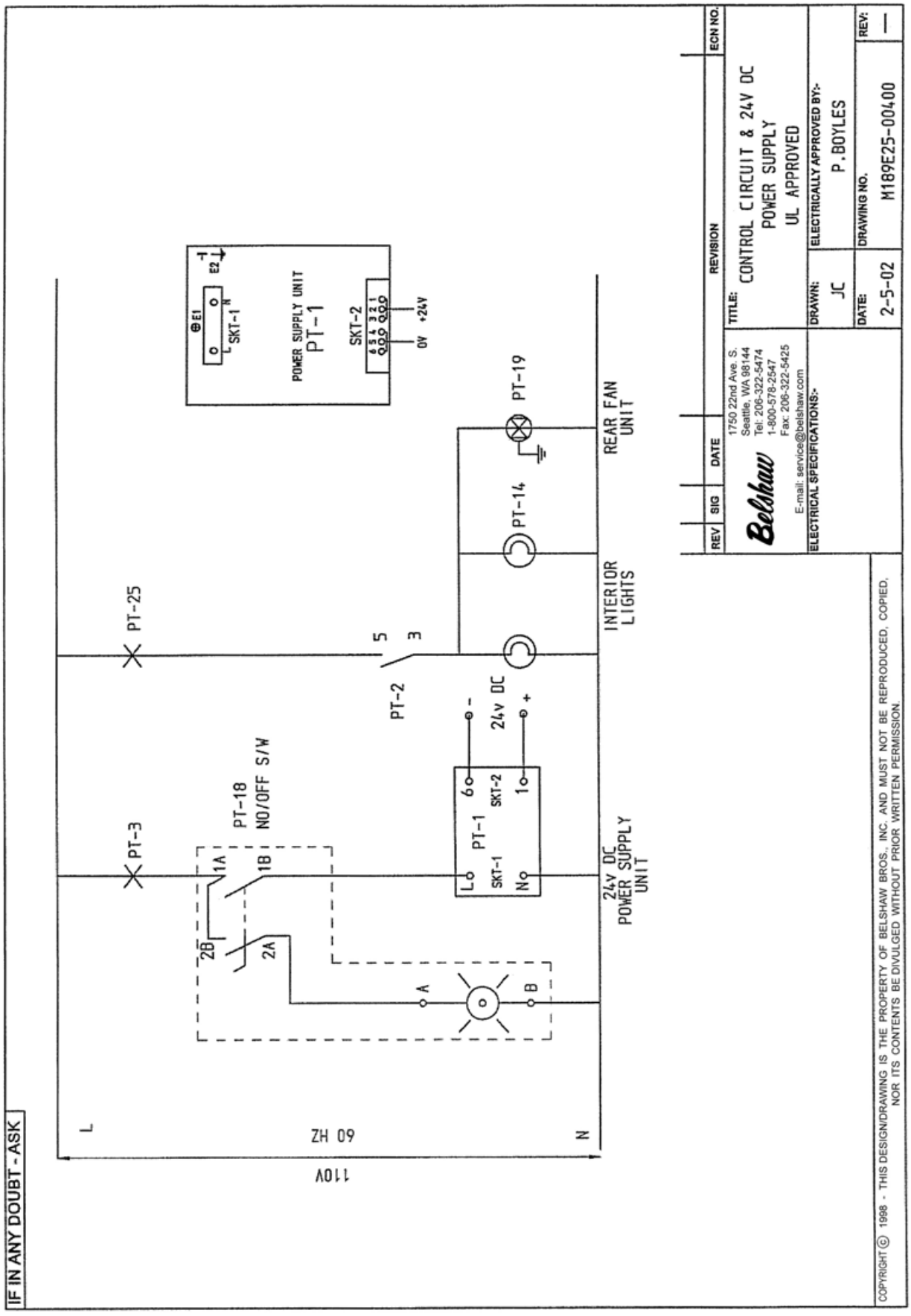
IF IN ANY DOUBT - ASK
L
60 HZ
N
110V
PT-25
PT-3
PT-18
NO/OFF S/W
1A
1B
2B
2A
A
B
PT-2
5
3
PT-1
SKT-1
SKT-2
6
1
L
N
24v DC
24v DC
POWER SUPPLY
UNIT
INTERIOR
LIGHTS
PT-14
PT-19
REAR FAN
UNIT
POWER SUPPLY UNIT
PT-1
SKT-1
E1
E2
SKT-2
0V
+24V
REVISION
REV
BIG
DATE
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
CONTROL CIRCUIT & 24V DC
POWER SUPPLY
UL APPROVED
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
2-5-02
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M189E25-00400
REV:
—
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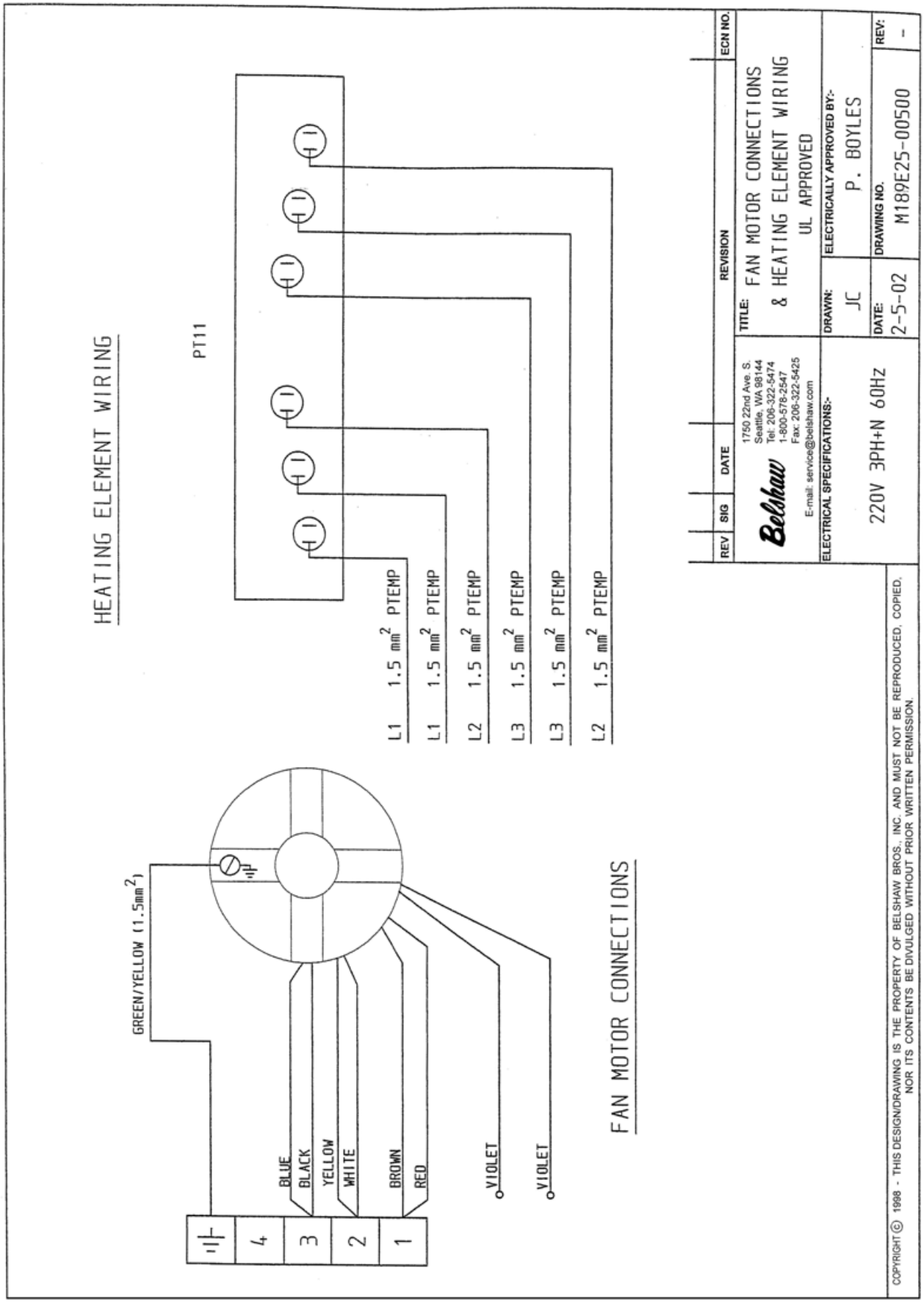
HEATING ELEMENT WIRING
PT11
L1 1.5 mm² PTEMP
L1 1.5 mm² PTEMP
L2 1.5 mm² PTEMP
L3 1.5 mm² PTEMP
L3 1.5 mm² PTEMP
L2 1.5 mm² PTEMP
FAN MOTOR CONNECTIONS
GREEN/YELLOW (1.5mm²)
BLUE
BLACK
YELLOW
WHITE
BROWN
RED
VIOLET
VIOLET
4
3
2
1
REV
SIG
DATE
REVISION
ECN NO.
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1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE: FAN MOTOR CONNECTIONS & HEATING ELEMENT WIRING UL APPROVED
ELECTRICAL SPECIFICATIONS:-
220V 3PH+N 60Hz
DRAWN: JC
DATE: 2-5-02
ELECTRICALLY APPROVED BY:- P. BOYLES
DRAWING NO. M189E25-00500
REV: -
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DRAWING PT-Ref	DESCRIPTION	PART NUMBER
PT-1	INTERIOR LIGHT M.C.B.	B851-22-011
PT-2	CONTROL CIRCUIT M.C.B.	B851-22-011
PT-4a	FAN MOTOR OVERLOAD UNIT N'1 (TOP)	B859-03-005
PT-4b	FAN MOTOR OVERLOAD N'1 AUXILIARY CONTACT	B859-14-011
PT-5a	FAN MOTOR OVERLOAD UNIT N'2 (BOTTOM)	B859-03-005
PT-5b	FAN MOTOR OVERLOAD N'2 AUXILIARY CONTACT	B859-14-014
PT-8a	INTERIOR LIGHT RELAY	B723-37-004
PT-8b	INTERIOR LIGHT RELAY BASE	B723-36-001
PT-10a	FAN MOTOR CONTACTOR N'1-FORWARD (TOP MOTOR)	B859-08-046
PT-10b	FAN MOTOR CONTACTOR N'1-REVERSE (TOP MOTOR)	B859-08-046
PT-10c	FAN MOTOR N'1-ELECT/MECH INTERLOCK	B859-18-004
PT-11a	FAN MOTOR CONTACTOR N'2-FORWARD (BTM MOTOR)	B859-08-046
PT-11b	FAN MOTOR CONTACTOR N'2-REVERSE (BTM MOTOR)	B859-08-046
PT-11c	FAN MOTOR N'2-ELECT/MECH INTERLOCK	B859-18-004
PT-14	24V DC POWER SUPPLY UNIT	B705-93-006
PT-15	TOP HEATING ELEMENT CONTACTOR	B801-08-023
PT-16	BOTTOM HEATING ELEMENT CONTACTOR	B801-08-023
PT-17	DAMPER SOLENOID (L/H)	B749-83-001
	DAMPER SOLENOID (R/H)	B749-83-002
PT-18	FAN MOTOR UNIT N'1 (TOP MOTOR)	B720-74-001
PT-19	FAN MOTOR UNIT N'1 (BOTTOM MOTOR)	B720-74-001
PT-20	WATER SOLENOID	B994-83-003
PT-21	OVERHEAT THERMOSTAT N'1	B873-30-014
PT-23	OVEN THERMOCOUPLE	B873-95-001
PT-24a	PCB ASSY	M158-25-15500
PT-24b		
PT-26a	MAIN OFF/ON SWITCH	B761-07-001
PT-26b	110v BULB	B761-92-001
PT-27	DOOR SWITCH	B827-11-001
PT-28	INTERIOR LIGHT UNIT	B721-67-001
PT-29	BUZZER	B982-92-002
PT-30	HEATING ELEMENT UNIT N'1 (TOP)	B847-04-073
PT-31	HEATING ELEMENT UNIT N'2 (BOTTOM)	B847-04-073
PT-32	DATA LINK SOCKET CABLE	B705-25-005
PT-34	REAR FAN UNIT	B869-75-025

REV	SIG	DATE	REVISION	ECN NO.

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TITLE: ELECTRICAL COMPONENTS LAYOUT BXC COLOUR 10 TRAY (UL APPROVED)

ELECTRICAL SPECIFICATIONS:-

DRAWN: JC

DATE: 8/7/02

ELECTRICALLY APPROVED BY:- P. BOYLES

DRAWING NO. M150E25-55000

REV: —

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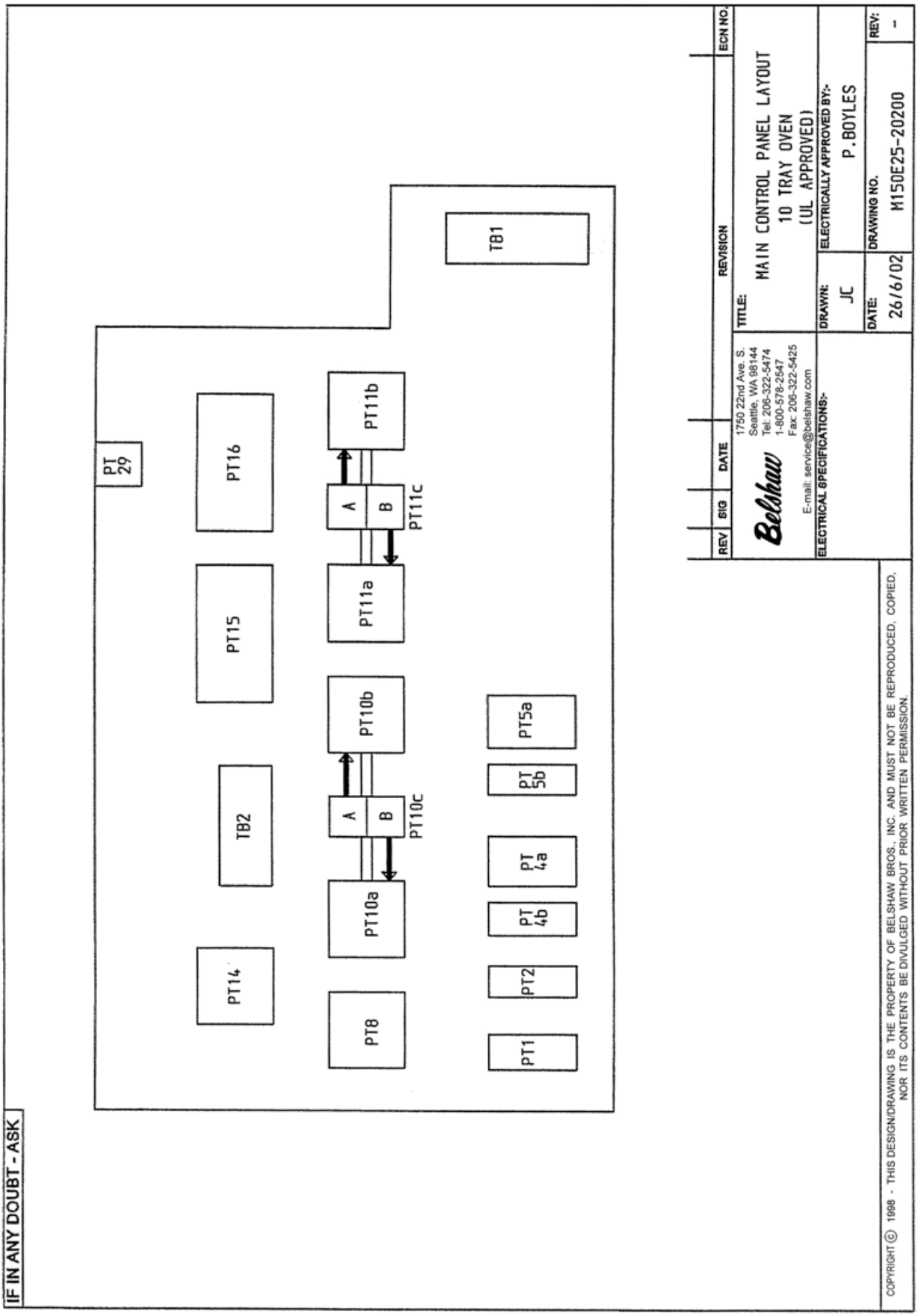
IF IN ANY DOUBT - ASK
PT 29
PT16
PT15
PT14
TB2
PT8
PT10a
PT10b
PT10c
A
B
PT11b
PT11c
PT11a
TB1
PT5a
PT 5b
PT 4a
PT 4b
PT2
PT1
REV
SIG
DATE
REVISION
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
MAIN CONTROL PANEL LAYOUT
10 TRAY OVEN
(UL APPROVED)
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
ELECTRICALLY APPROVED BY:-
P.BOYLES
DATE:
26/6/02
DRAWING NO.
M150E25-20200
REV:
-
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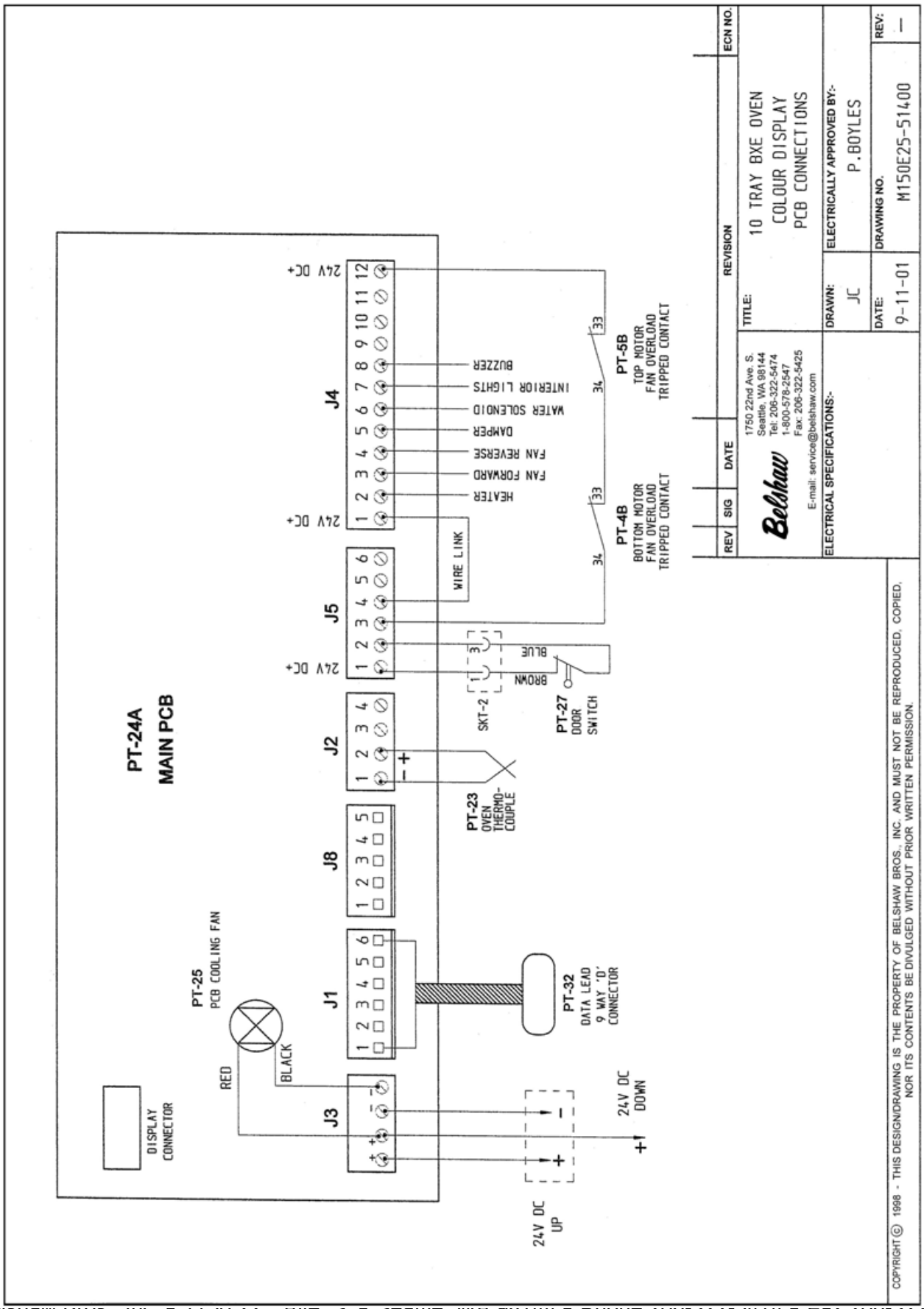
PT-24A
MAIN PCB
DISPLAY CONNECTOR
PT-25
PCB COOLING FAN
RED
BLACK
J1
J3
J8
J2
J5
J4
24V DC+
HEATER
FAN FORWARD
FAN REVERSE
DAMPER
WATER SOLENOID
INTERIOR LIGHTS
BUZZER
WIRE LINK
PT-23
OVEN
THERMO-
COUPLE
SKT-2
PT-27
DOOR
SWITCH
BROWN
BLUE
PT-4B
BOTTOM MOTOR
FAN OVERLOAD
TRIPPED CONTACT
PT-5B
TOP MOTOR
FAN OVERLOAD
TRIPPED CONTACT
PT-32
DATA LEAD
9 WAY 'D'
CONNECTOR
24V DC
UP
24V DC
DOWN
REV
SIG
DATE
REVISION
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
10 TRAY BXE OVEN
COLOUR DISPLAY
PCB CONNECTIONS
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
9-11-01
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M150E25-51400
REV:
—
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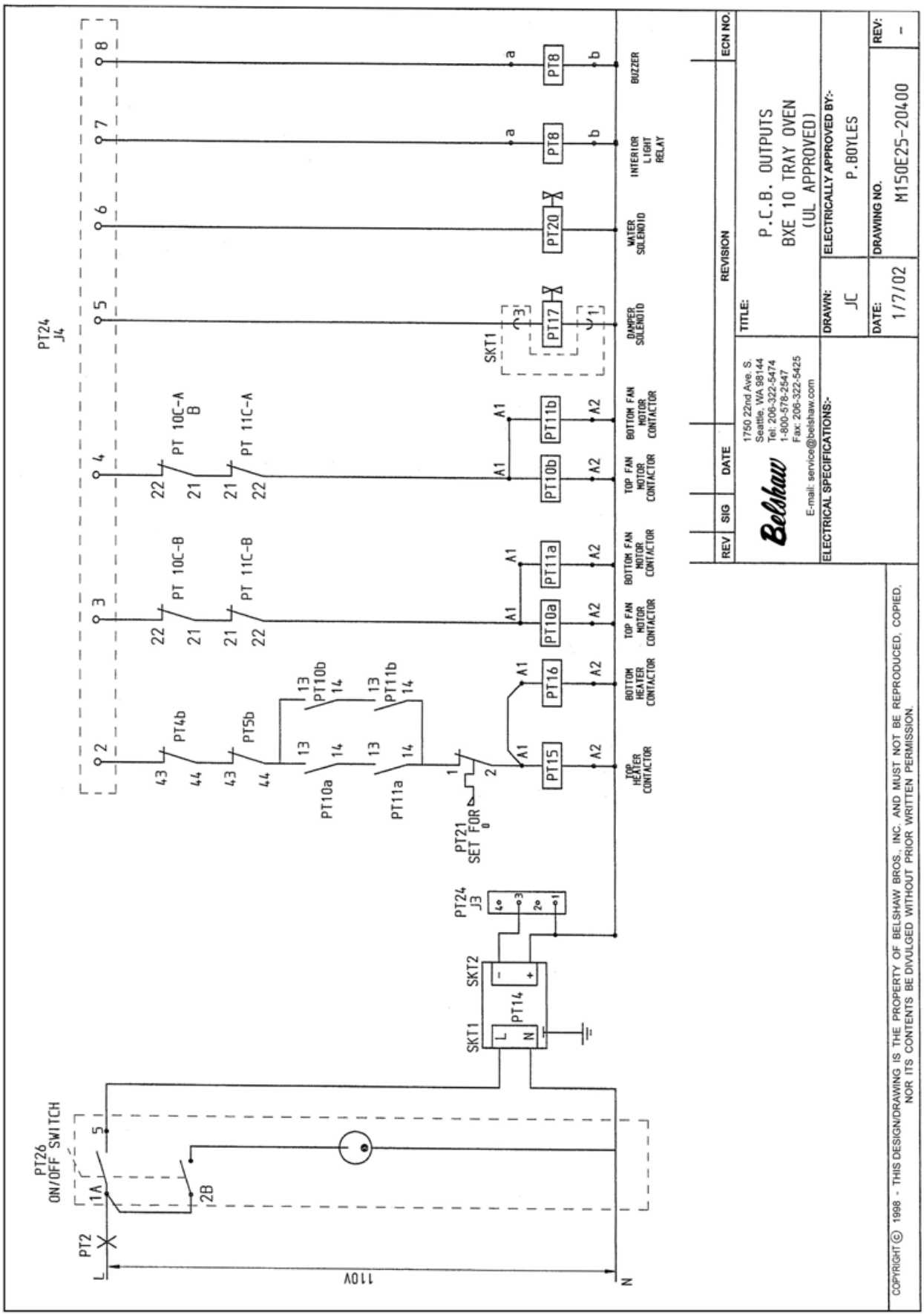
PT24
J4
PT26
ON/OFF SWITCH
PT2
110V
PT21
SET FOR 0
PT24
J3
SKT1
SKT2
PT14
PT4b
PT5b
PT10a
PT11a
PT10b
PT11b
PT 10C-B
PT 11C-B
PT 10C-A
B
PT 11C-A
TOP HEATER CONTACTOR
BOTTOM HEATER CONTACTOR
TOP FAN MOTOR CONTACTOR
BOTTOM FAN MOTOR CONTACTOR
DAMPER SOLENOID
WATER SOLENOID
INTERIOR LIGHT RELAY
BUZZER
REV
SIG
DATE
REVISION
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
P.C.B. OUTPUTS
BXE 10 TRAY OVEN
(UL APPROVED)
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
1/7/02
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M150E25-20400
REV:
-
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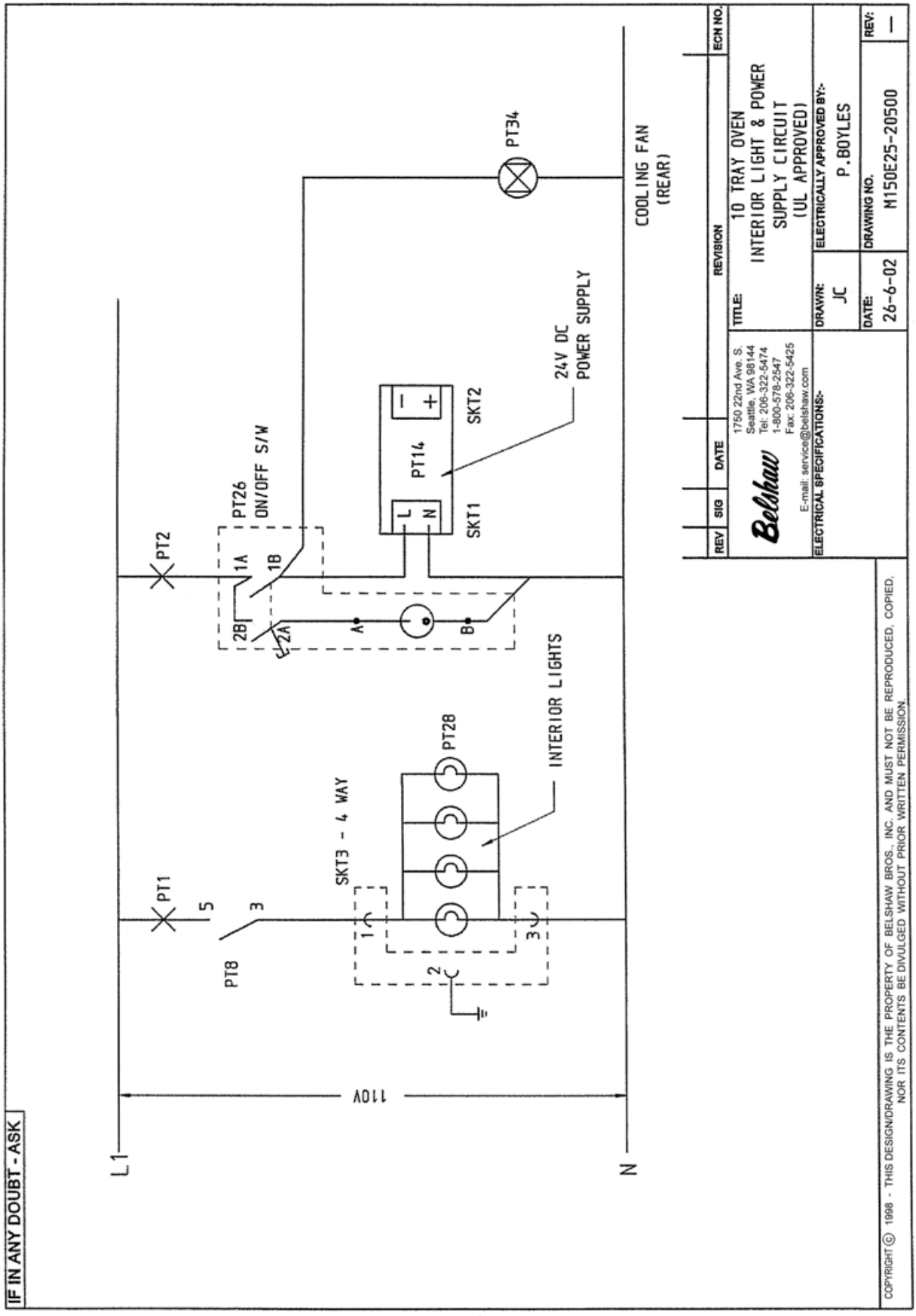
IF IN ANY DOUBT - ASK
L1
N
110V
PT1
5
3
PT8
SKT3 - 4 WAY
1
2
3
PT28
INTERIOR LIGHTS
PT2
PT26
ON/OFF S/W
1A
1B
2B
2A
A
B
PT14
L
N
SKT1
SKT2
24V DC
POWER SUPPLY
PT34
COOLING FAN
(REAR)
REV
SIG
DATE
REVISION
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
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1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
10 TRAY OVEN
INTERIOR LIGHT & POWER
SUPPLY CIRCUIT
(UL APPROVED)
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
DATE:
26-6-02
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M150E25-20500
REV:
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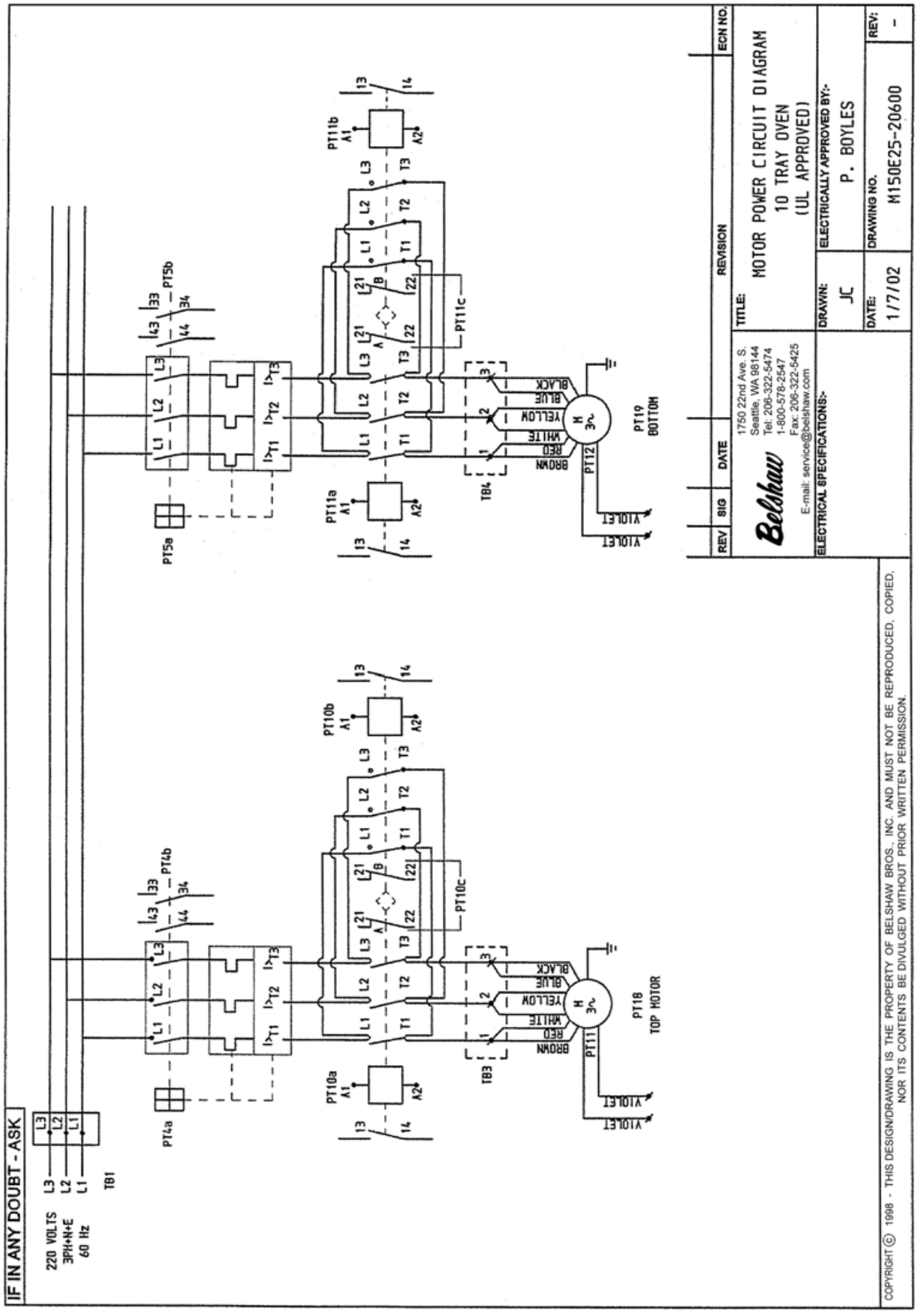
IF IN ANY DOUBT - ASK
220 VOLTS
3PH+N+E
60 Hz
TB1
PT4a
PT4b
PT5a
PT5b
PT10a
PT10b
PT10c
PT11a
PT11b
PT11c
TB3
TB4
PT18
TOP MOTOR
PT19
BOTTOM
PT11
PT12
BROWN
RED
WHITE
YELLOW
BLUE
BLACK
VIOLET
REV
SIG
DATE
REVISION
ECN NO.
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
MOTOR POWER CIRCUIT DIAGRAM
10 TRAY OVEN
(UL APPROVED)
ELECTRICAL SPECIFICATIONS:-
DRAWN:
JC
ELECTRICALLY APPROVED BY:-
P. BOYLES
DATE:
1/7/02
DRAWING NO.
M150E25-20600
REV:
-
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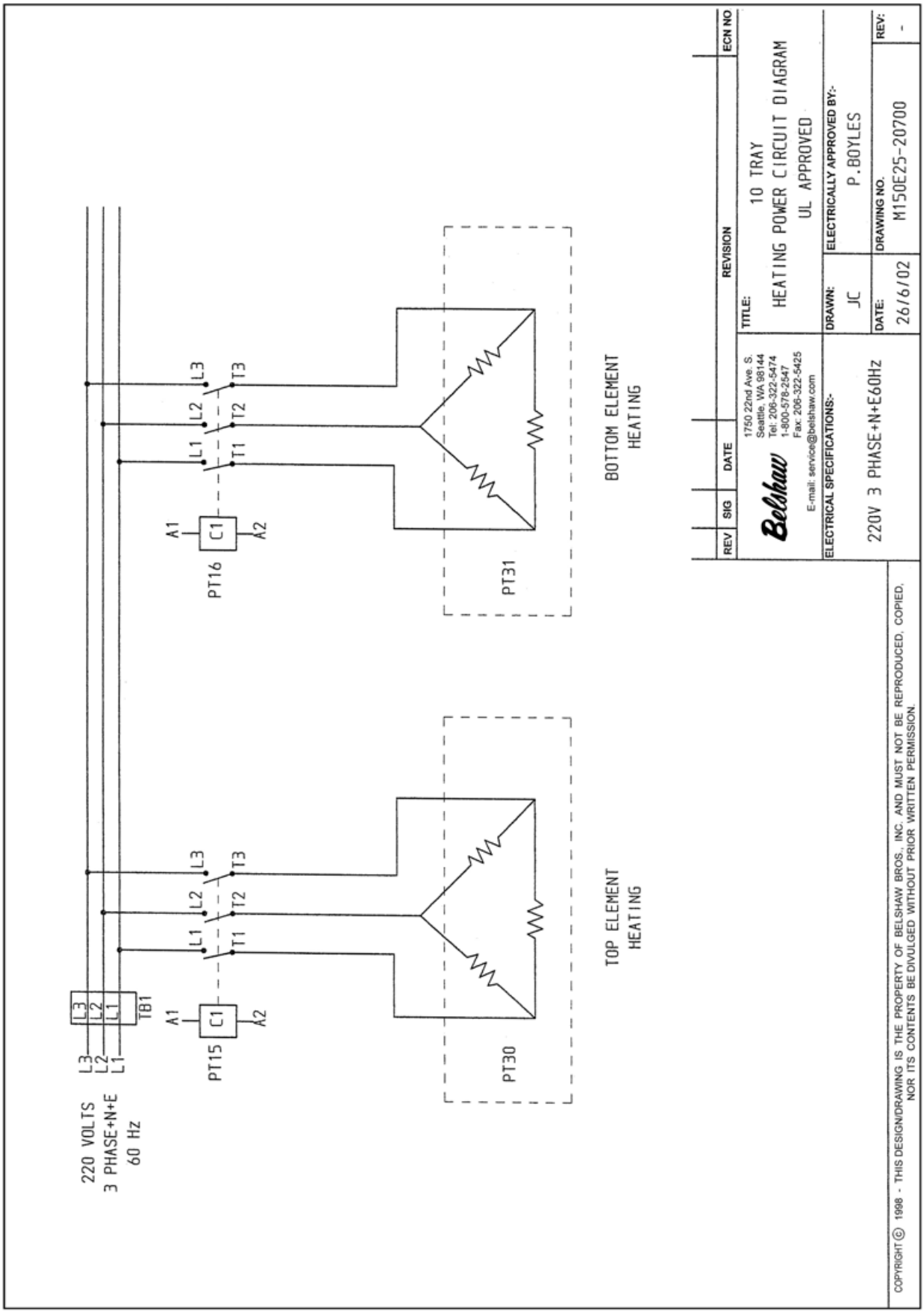
220 VOLTS
3 PHASE+N+E
60 Hz
L3
L2
L1
TB1
A1
C1
A2
PT15
PT16
PT30
PT31
TOP ELEMENT
HEATING
BOTTOM ELEMENT
HEATING
REV
SIG
DATE
REVISION
ECN NO
Belshaw
1750 22nd Ave. S.
Seattle, WA 98144
Tel: 206-322-5474
1-800-578-2547
Fax: 206-322-5425
E-mail: service@belshaw.com
TITLE:
10 TRAY
HEATING POWER CIRCUIT DIAGRAM
UL APPROVED
ELECTRICAL SPECIFICATIONS:-
220V 3 PHASE+N+E60Hz
DRAWN:
JC
DATE:
26/6/02
ELECTRICALLY APPROVED BY:-
P.BOYLES
DRAWING NO.
M150E25-20700
REV:
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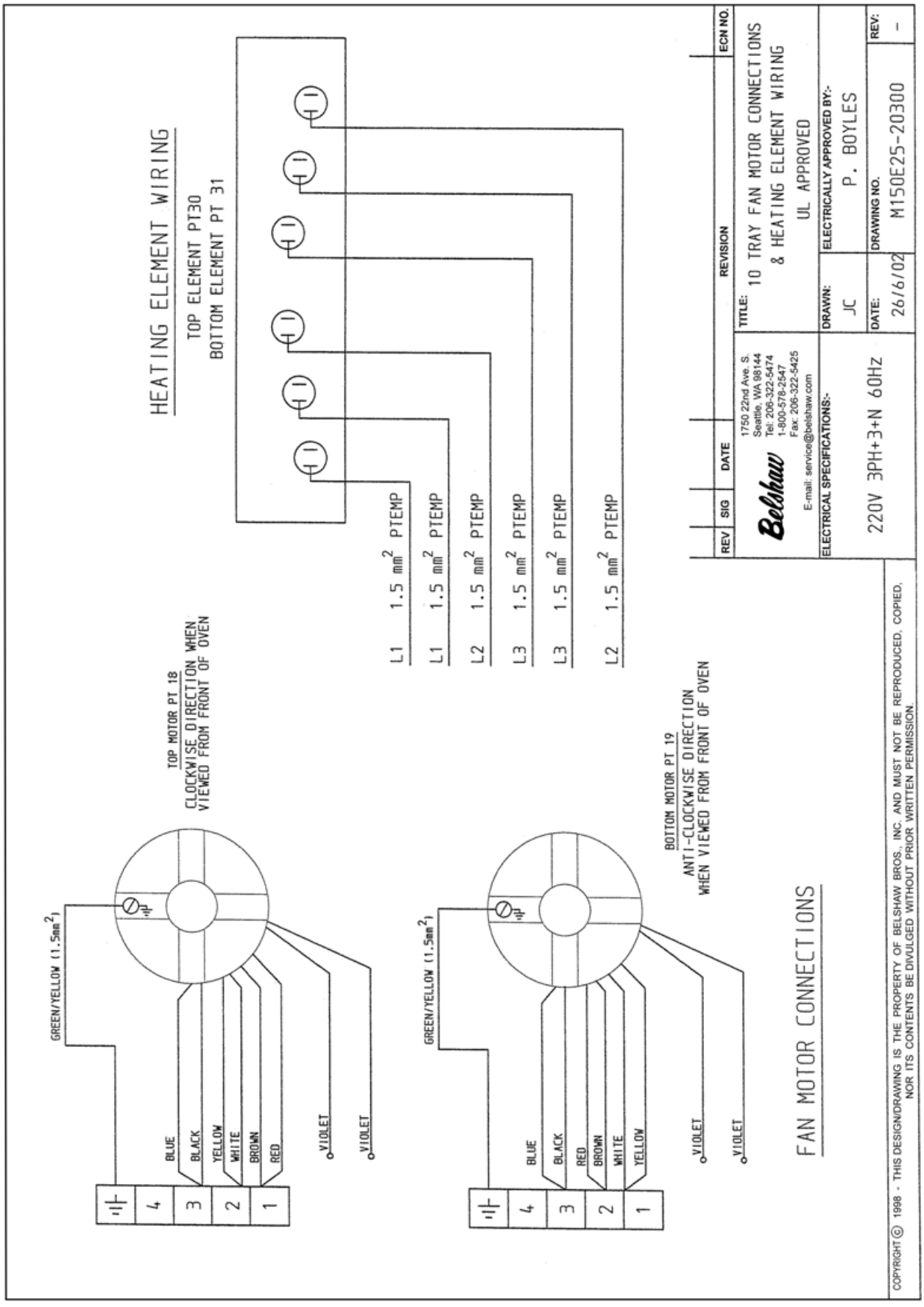
HEATING ELEMENT WIRING
TOP ELEMENT PT30
BOTTOM ELEMENT PT 31
L1 1.5 mm² PTEMP
L1 1.5 mm² PTEMP
L2 1.5 mm² PTEMP
L3 1.5 mm² PTEMP
L3 1.5 mm² PTEMP
L2 1.5 mm² PTEMP
TOP MOTOR PT 18
CLOCKWISE DIRECTION WHEN VIEWED FROM FRONT OF OVEN
GREEN/YELLOW (1.5mm²)
BLUE
BLACK
YELLOW
WHITE
BROWN
RED
VIOLET
VIOLET
BOTTOM MOTOR PT 19
ANTI-CLOCKWISE DIRECTION WHEN VIEWED FROM FRONT OF OVEN
GREEN/YELLOW (1.5mm²)
BLUE
BLACK
RED
BROWN
WHITE
YELLOW
VIOLET
VIOLET
FAN MOTOR CONNECTIONS
REV
SIG
DATE
REVISION
ECN NO.
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Seattle, WA 98144
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E-mail: service@belshaw.com
TITLE:
10 TRAY FAN MOTOR CONNECTIONS
& HEATING ELEMENT WIRING
UL APPROVED
ELECTRICAL SPECIFICATIONS:-
220V 3PH+3+N 60Hz
DRAWN:
JC
ELECTRICALLY APPROVED BY:-
P. BOYLES
DATE:
26/6/02
DRAWING NO.
M150E25-20300
REV:
-
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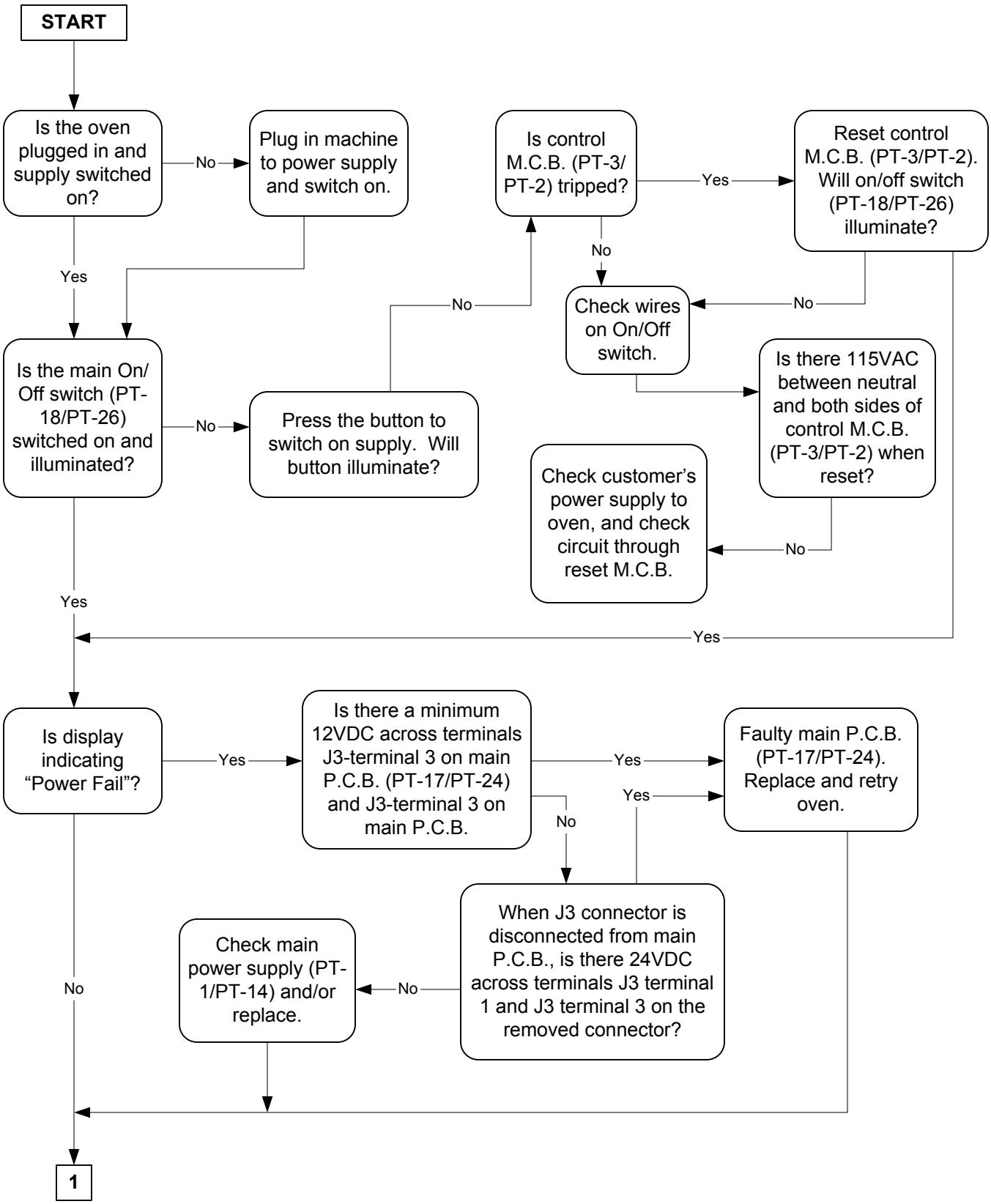
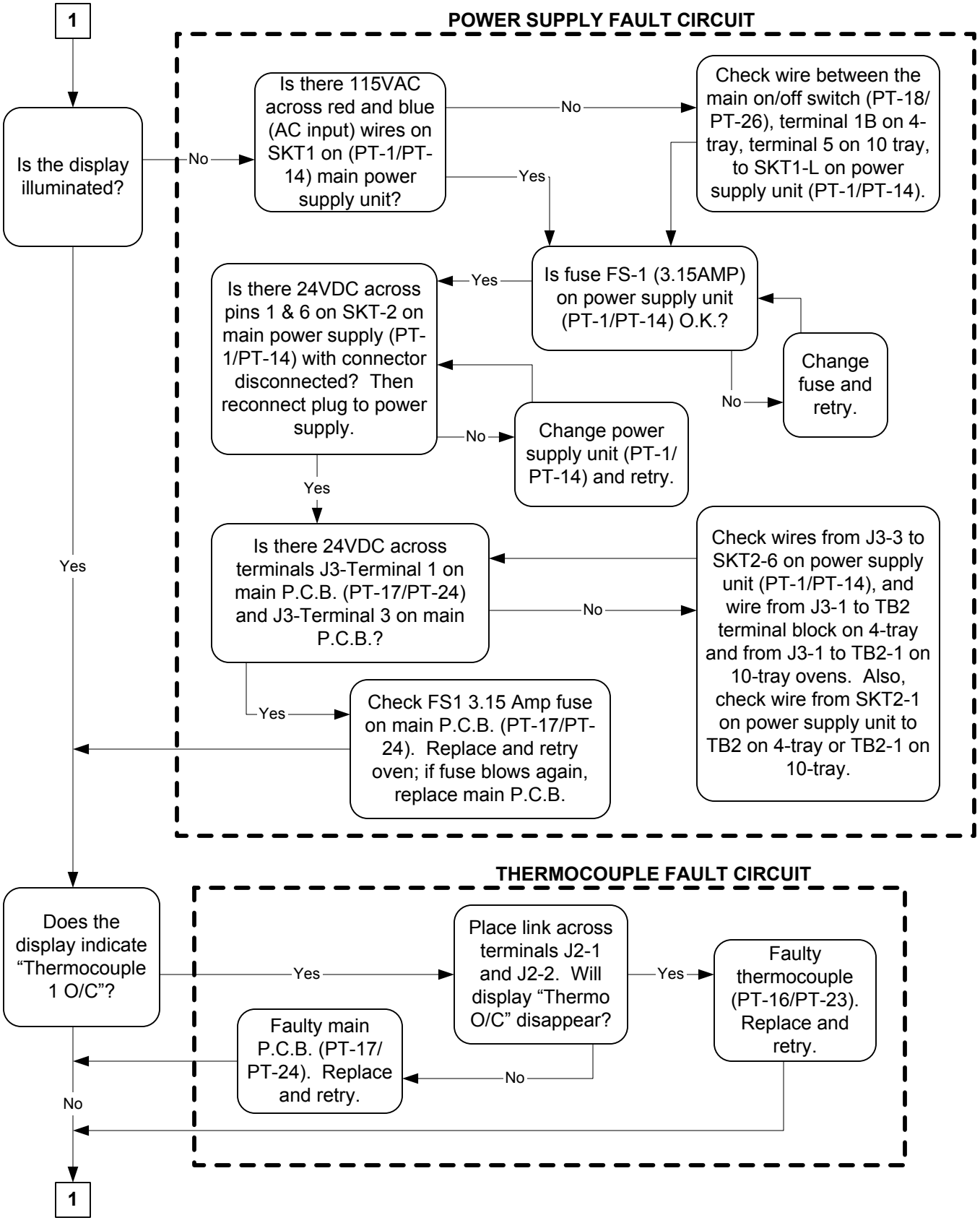
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


START
Is the oven plugged in and supply switched on?
No
Plug in machine to power supply and switch on.
Yes
Is the main On/ Off switch (PT-18/PT-26) switched on and illuminated?
No
Press the button to switch on supply. Will button illuminate?
No
Is control M.C.B. (PT-3/ PT-2) tripped?
Yes
Reset control M.C.B. (PT-3/PT-2). Will on/off switch (PT-18/PT-26) illuminate?
No
Check wires on On/Off switch.
No
Is there 115VAC between neutral and both sides of control M.C.B. (PT-3/PT-2) when reset?
No
Check customer's power supply to oven, and check circuit through reset M.C.B.
Yes
Yes
Is display indicating "Power Fail"?
Yes
Is there a minimum 12VDC across terminals J3-terminal 3 on main P.C.B. (PT-17/PT-24) and J3-terminal 3 on main P.C.B.
Yes
Faulty main P.C.B. (PT-17/PT-24). Replace and retry oven.
Yes
No
When J3 connector is disconnected from main P.C.B., is there 24VDC across terminals J3 terminal 1 and J3 terminal 3 on the removed connector?
No
Check main power supply (PT-1/PT-14) and/or replace.
No
1

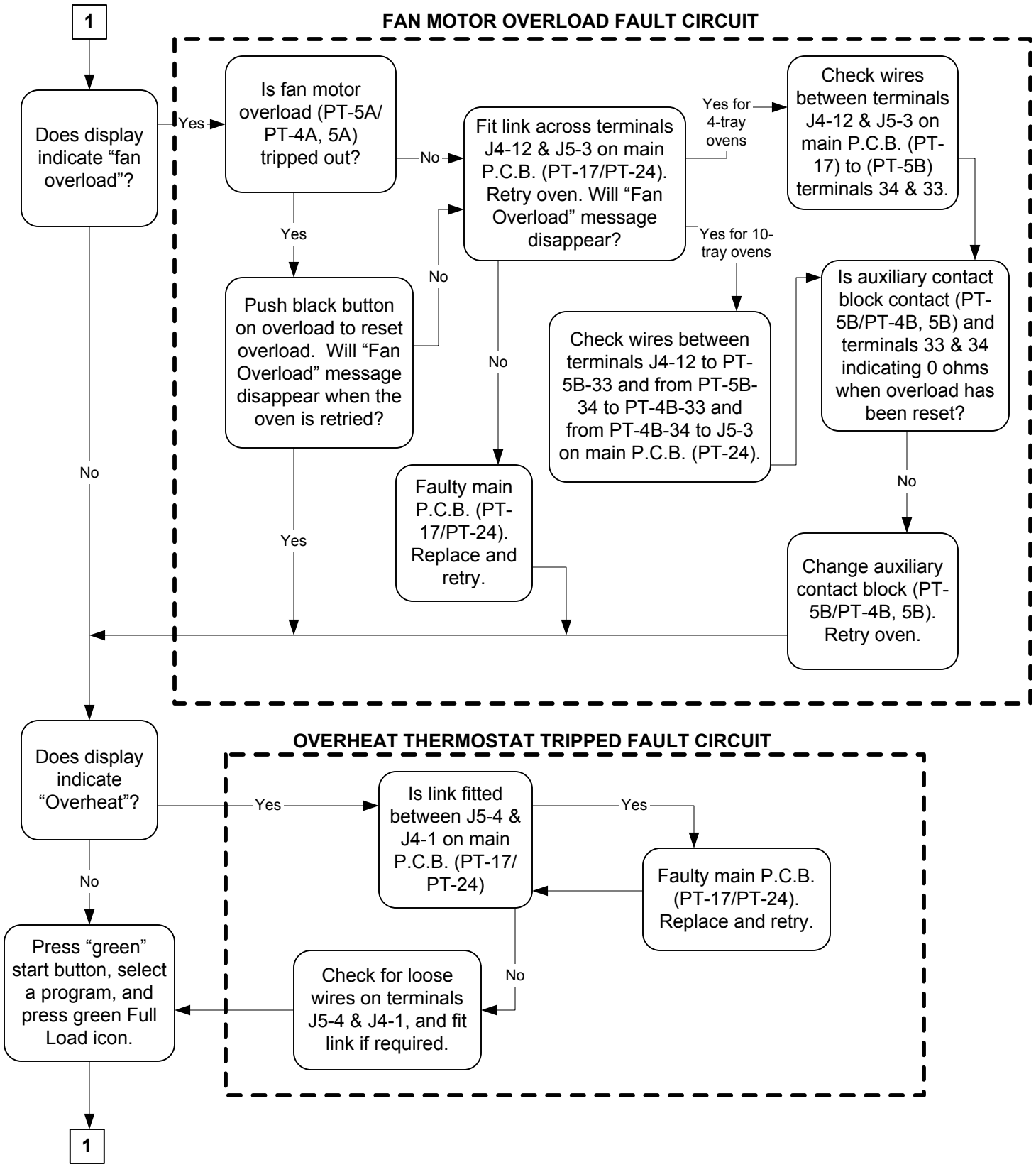
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
POWER SUPPLY FAULT CIRCUIT
Is the display illuminated?
No
Is there 115VAC across red and blue (AC input) wires on SKT1 on (PT-1/PT-14) main power supply unit?
No
Check wire between the main on/off switch (PT-18/ PT-26), terminal 1B on 4-tray, terminal 5 on 10 tray, to SKT1-L on power supply unit (PT-1/PT-14).
Yes
Is fuse FS-1 (3.15AMP) on power supply unit (PT-1/PT-14) O.K.?
Yes
Is there 24VDC across pins 1 & 6 on SKT-2 on main power supply (PT-1/PT-14) with connector disconnected? Then reconnect plug to power supply.
No
Change fuse and retry.
No
Change power supply unit (PT-1/ PT-14) and retry.
Yes
Yes
Is there 24VDC across terminals J3-Terminal 1 on main P.C.B. (PT-17/PT-24) and J3-Terminal 3 on main P.C.B.?
No
Check wires from J3-3 to SKT2-6 on power supply unit (PT-1/PT-14), and wire from J3-1 to TB2 terminal block on 4-tray and from J3-1 to TB2-1 on 10-tray ovens. Also, check wire from SKT2-1 on power supply unit to TB2 on 4-tray or TB2-1 on 10-tray.
Yes
Check FS1 3.15 Amp fuse on main P.C.B. (PT-17/PT-24). Replace and retry oven; if fuse blows again, replace main P.C.B.
THERMOCOUPLE FAULT CIRCUIT
Does the display indicate "Thermocouple 1 O/C"?
Yes
Place link across terminals J2-1 and J2-2. Will display "Thermo O/C" disappear?
Yes
Faulty thermocouple (PT-16/PT-23). Replace and retry.
No
Faulty main P.C.B. (PT-17/ PT-24). Replace and retry.
No
1

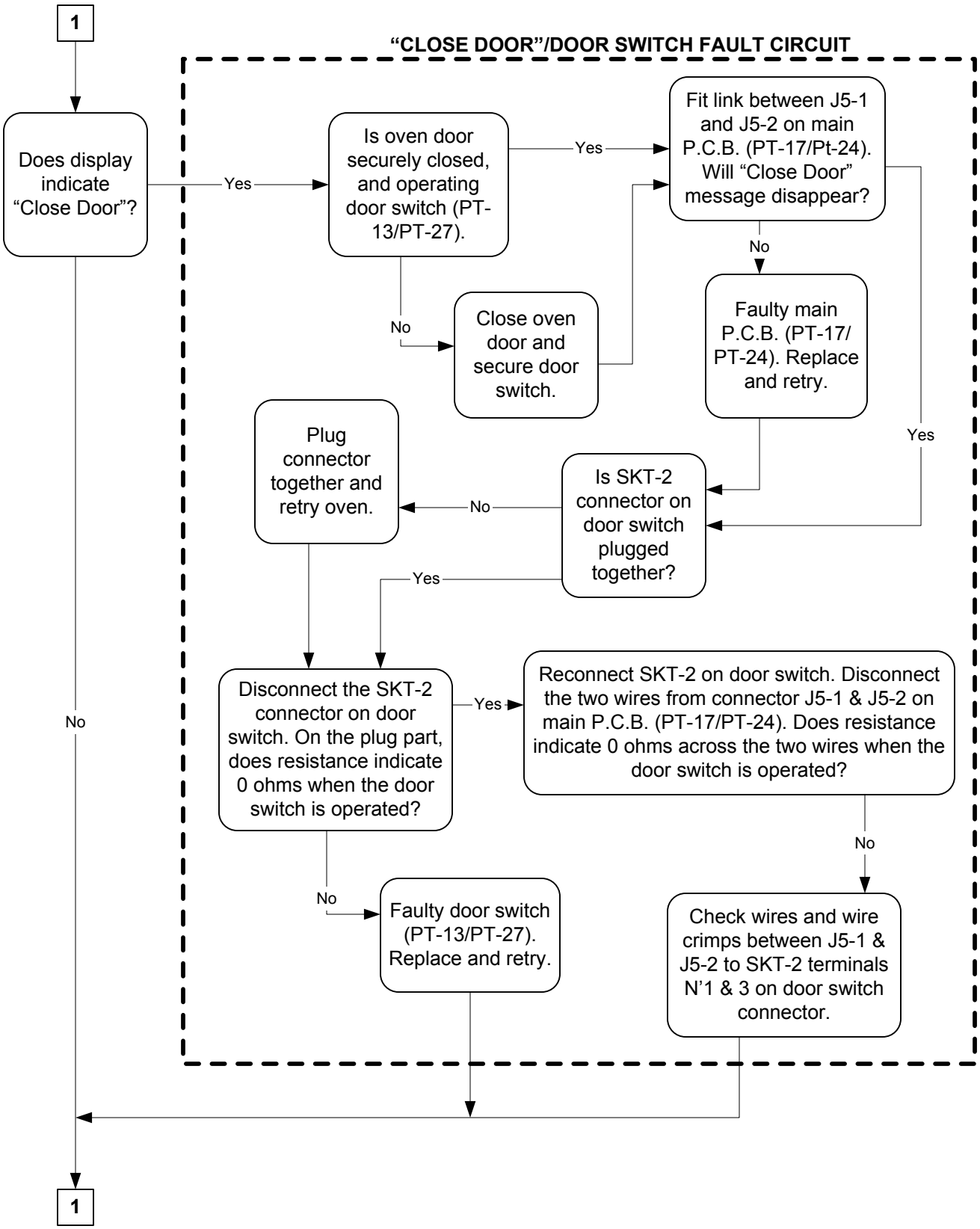
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
FAN MOTOR OVERLOAD FAULT CIRCUIT
Does display indicate "fan overload"?
Yes
Is fan motor overload (PT-5A/ PT-4A, 5A) tripped out?
No
Fit link across terminals J4-12 & J5-3 on main P.C.B. (PT-17/PT-24). Retry oven. Will "Fan Overload" message disappear?
Yes for 4-tray ovens
Check wires between terminals J4-12 & J5-3 on main P.C.B. (PT-17) to (PT-5B) terminals 34 & 33.
Yes
Yes for 10-tray ovens
No
Push black button on overload to reset overload. Will "Fan Overload" message disappear when the oven is retried?
Check wires between terminals J4-12 to PT-5B-33 and from PT-5B-34 to PT-4B-33 and from PT-4B-34 to J5-3 on main P.C.B. (PT-24).
Is auxiliary contact block contact (PT-5B/PT-4B, 5B) and terminals 33 & 34 indicating 0 ohms when overload has been reset?
No
Yes
Faulty main P.C.B. (PT-17/PT-24). Replace and retry.
No
Change auxiliary contact block (PT-5B/PT-4B, 5B). Retry oven.
Does display indicate "Overheat"?
OVERHEAT THERMOSTAT TRIPPED FAULT CIRCUIT
Yes
Is link fitted between J5-4 & J4-1 on main P.C.B. (PT-17/ PT-24)
Yes
Faulty main P.C.B. (PT-17/PT-24). Replace and retry.
No
Press "green" start button, select a program, and press green Full Load icon.
Check for loose wires on terminals J5-4 & J4-1, and fit link if required.
No
1

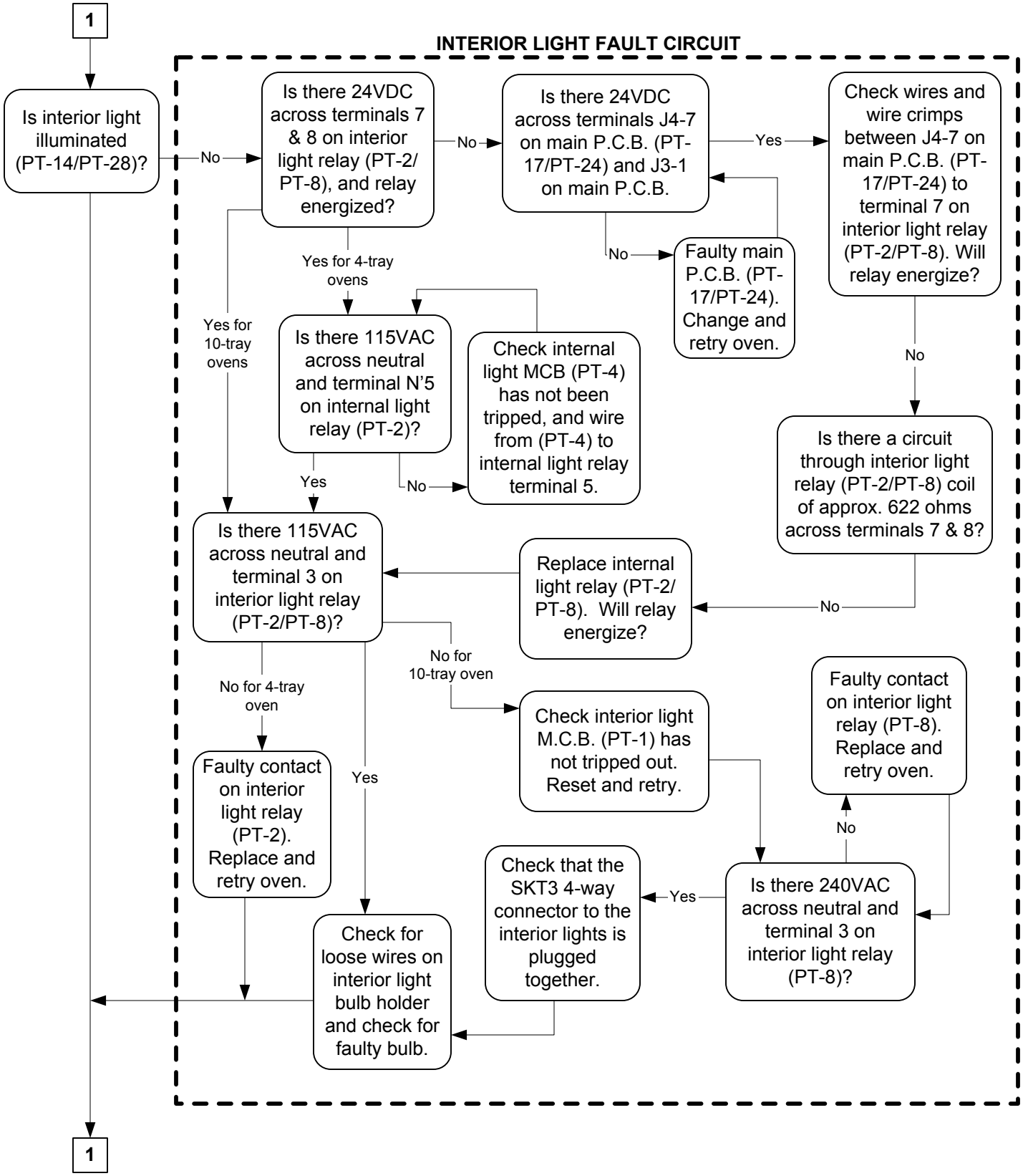
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
"CLOSE DOOR"/DOOR SWITCH FAULT CIRCUIT
Does display indicate "Close Door"?
Yes
No
Is oven door securely closed, and operating door switch (PT-13/PT-27).
Yes
No
Close oven door and secure door switch.
Fit link between J5-1 and J5-2 on main P.C.B. (PT-17/Pt-24). Will "Close Door" message disappear?
No
Yes
Faulty main P.C.B. (PT-17/ PT-24). Replace and retry.
Plug connector together and retry oven.
No
Is SKT-2 connector on door switch plugged together?
Yes
Disconnect the SKT-2 connector on door switch. On the plug part, does resistance indicate 0 ohms when the door switch is operated?
Yes
No
Faulty door switch (PT-13/PT-27). Replace and retry.
Reconnect SKT-2 on door switch. Disconnect the two wires from connector J5-1 & J5-2 on main P.C.B. (PT-17/PT-24). Does resistance indicate 0 ohms across the two wires when the door switch is operated?
No
Check wires and wire crimps between J5-1 & J5-2 to SKT-2 terminals N'1 & 3 on door switch connector.
1

*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
INTERIOR LIGHT FAULT CIRCUIT
Is interior light illuminated (PT-14/PT-28)?
No
Is there 24VDC across terminals 7 & 8 on interior light relay (PT-2/ PT-8), and relay energized?
No
Is there 24VDC across terminals J4-7 on main P.C.B. (PT-17/PT-24) and J3-1 on main P.C.B.
Yes
Check wires and wire crimps between J4-7 on main P.C.B. (PT-17/PT-24) to terminal 7 on interior light relay (PT-2/PT-8). Will relay energize?
No
Faulty main P.C.B. (PT-17/PT-24). Change and retry oven.
Yes for 4-tray ovens
Yes for 10-tray ovens
Is there 115VAC across neutral and terminal N'5 on internal light relay (PT-2)?
Yes
No
Check internal light MCB (PT-4) has not been tripped, and wire from (PT-4) to internal light relay terminal 5.
Is there a circuit through interior light relay (PT-2/PT-8) coil of approx. 622 ohms across terminals 7 & 8?
No
Is there 115VAC across neutral and terminal 3 on interior light relay (PT-2/PT-8)?
Replace internal light relay (PT-2/ PT-8). Will relay energize?
No for 4-tray oven
No for 10-tray oven
Yes
Faulty contact on interior light relay (PT-2). Replace and retry oven.
Check interior light M.C.B. (PT-1) has not tripped out. Reset and retry.
Faulty contact on interior light relay (PT-8). Replace and retry oven.
No
Check that the SKT3 4-way connector to the interior lights is plugged together.
Yes
Is there 240VAC across neutral and terminal 3 on interior light relay (PT-8)?
Check for loose wires on interior light bulb holder and check for faulty bulb.
1

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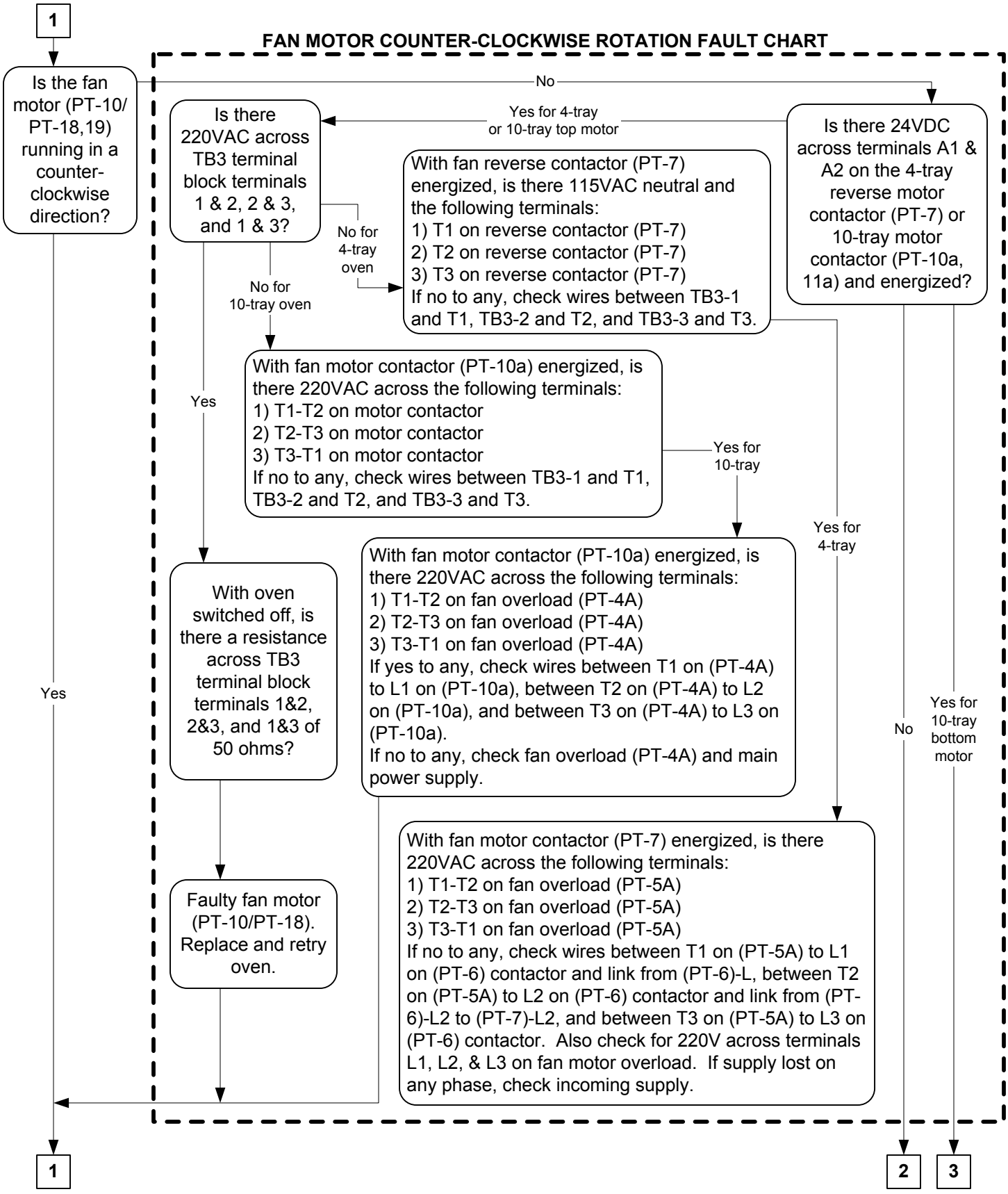
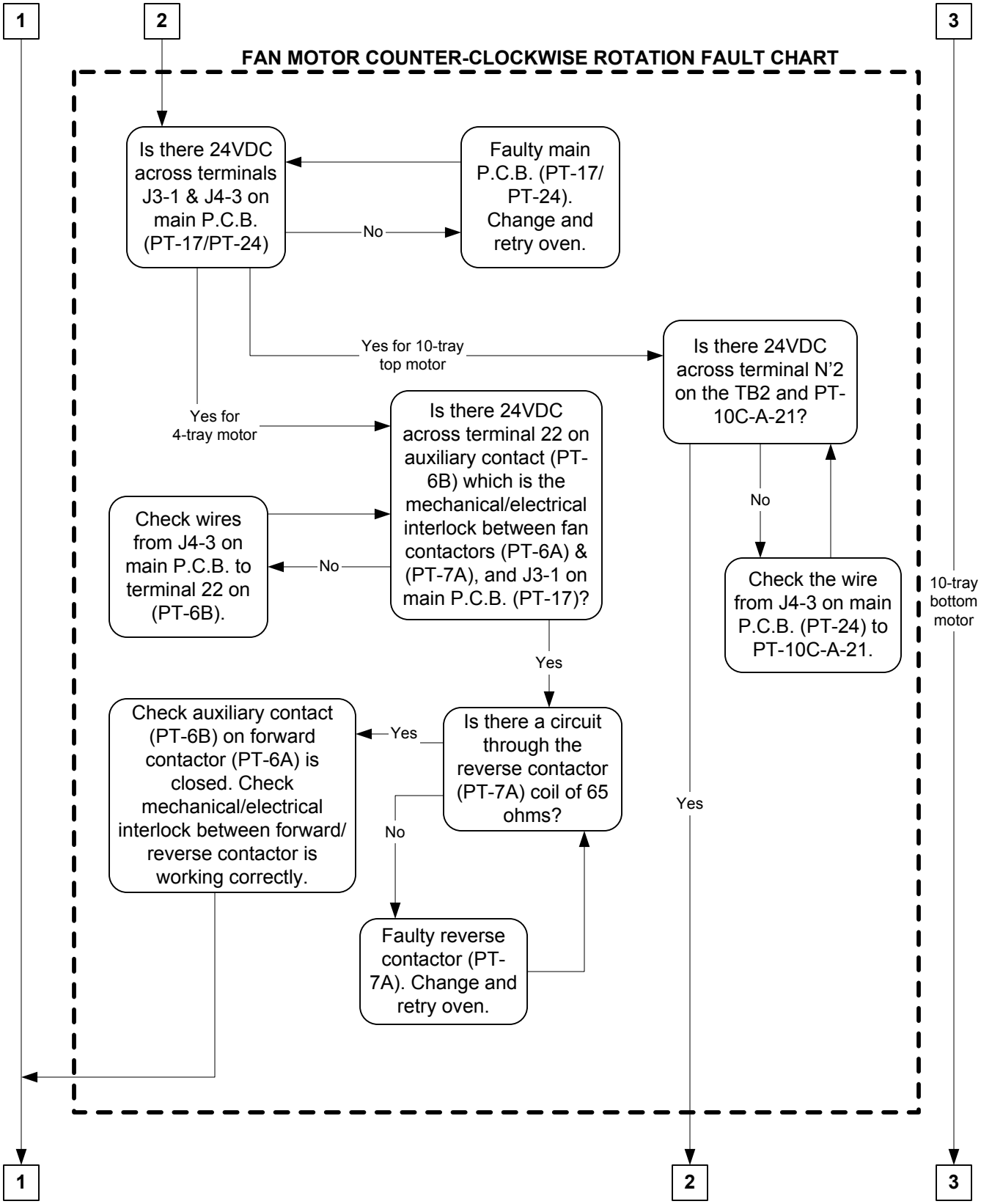
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
FAN MOTOR COUNTER-CLOCKWISE ROTATION FAULT CHART
Is the fan motor (PT-10/ PT-18,19) running in a counter-clockwise direction?
No
Is there 220VAC across TB3 terminal block terminals 1 & 2, 2 & 3, and 1 & 3?
Yes for 4-tray or 10-tray top motor
Is there 24VDC across terminals A1 & A2 on the 4-tray reverse motor contactor (PT-7) or 10-tray motor contactor (PT-10a, 11a) and energized?
No for 4-tray oven
No for 10-tray oven
With fan reverse contactor (PT-7) energized, is there 115VAC neutral and the following terminals:
1) T1 on reverse contactor (PT-7)
2) T2 on reverse contactor (PT-7)
3) T3 on reverse contactor (PT-7)
If no to any, check wires between TB3-1 and T1, TB3-2 and T2, and TB3-3 and T3.
Yes
With fan motor contactor (PT-10a) energized, is there 220VAC across the following terminals:
1) T1-T2 on motor contactor
2) T2-T3 on motor contactor
3) T3-T1 on motor contactor
If no to any, check wires between TB3-1 and T1, TB3-2 and T2, and TB3-3 and T3.
Yes for 10-tray
Yes for 4-tray
With oven switched off, is there a resistance across TB3 terminal block terminals 1&2, 2&3, and 1&3 of 50 ohms?
With fan motor contactor (PT-10a) energized, is there 220VAC across the following terminals:
1) T1-T2 on fan overload (PT-4A)
2) T2-T3 on fan overload (PT-4A)
3) T3-T1 on fan overload (PT-4A)
If yes to any, check wires between T1 on (PT-4A) to L1 on (PT-10a), between T2 on (PT-4A) to L2 on (PT-10a), and between T3 on (PT-4A) to L3 on (PT-10a).
If no to any, check fan overload (PT-4A) and main power supply.
Yes
No
Yes for 10-tray bottom motor
Faulty fan motor (PT-10/PT-18). Replace and retry oven.
With fan motor contactor (PT-7) energized, is there 220VAC across the following terminals:
1) T1-T2 on fan overload (PT-5A)
2) T2-T3 on fan overload (PT-5A)
3) T3-T1 on fan overload (PT-5A)
If no to any, check wires between T1 on (PT-5A) to L1 on (PT-6) contactor and link from (PT-6)-L, between T2 on (PT-5A) to L2 on (PT-6) contactor and link from (PT-6)-L2 to (PT-7)-L2, and between T3 on (PT-5A) to L3 on (PT-6) contactor. Also check for 220V across terminals L1, L2, & L3 on fan motor overload. If supply lost on any phase, check incoming supply.
1
2
3

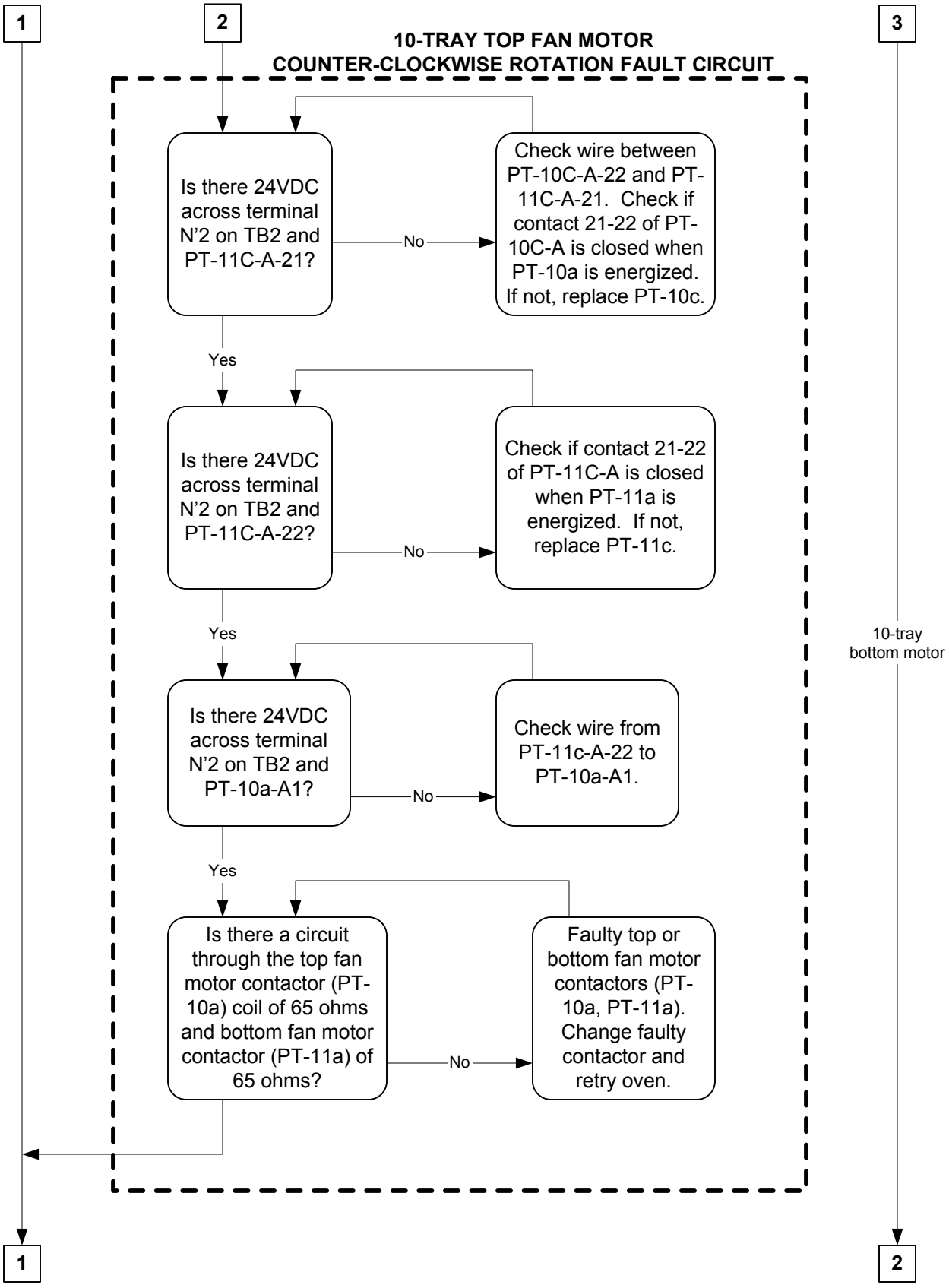
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
FAN MOTOR COUNTER-CLOCKWISE ROTATION FAULT CHART
Is there 24VDC across terminals J3-1 & J4-3 on main P.C.B. (PT-17/PT-24)
Faulty main P.C.B. (PT-17/ PT-24). Change and retry oven.
No
Yes for 10-tray top motor
Is there 24VDC across terminal N'2 on the TB2 and PT-10C-A-21?
Yes for 4-tray motor
Is there 24VDC across terminal 22 on auxiliary contact (PT-6B) which is the mechanical/electrical interlock between fan contactors (PT-6A) & (PT-7A), and J3-1 on main P.C.B. (PT-17)?
No
Check wires from J4-3 on main P.C.B. to terminal 22 on (PT-6B).
Check the wire from J4-3 on main P.C.B. (PT-24) to PT-10C-A-21.
10-tray bottom motor
Yes
Check auxiliary contact (PT-6B) on forward contactor (PT-6A) is closed. Check mechanical/electrical interlock between forward/ reverse contactor is working correctly.
Yes
Is there a circuit through the reverse contactor (PT-7A) coil of 65 ohms?
Yes
No
Faulty reverse contactor (PT-7A). Change and retry oven.
1
2
3

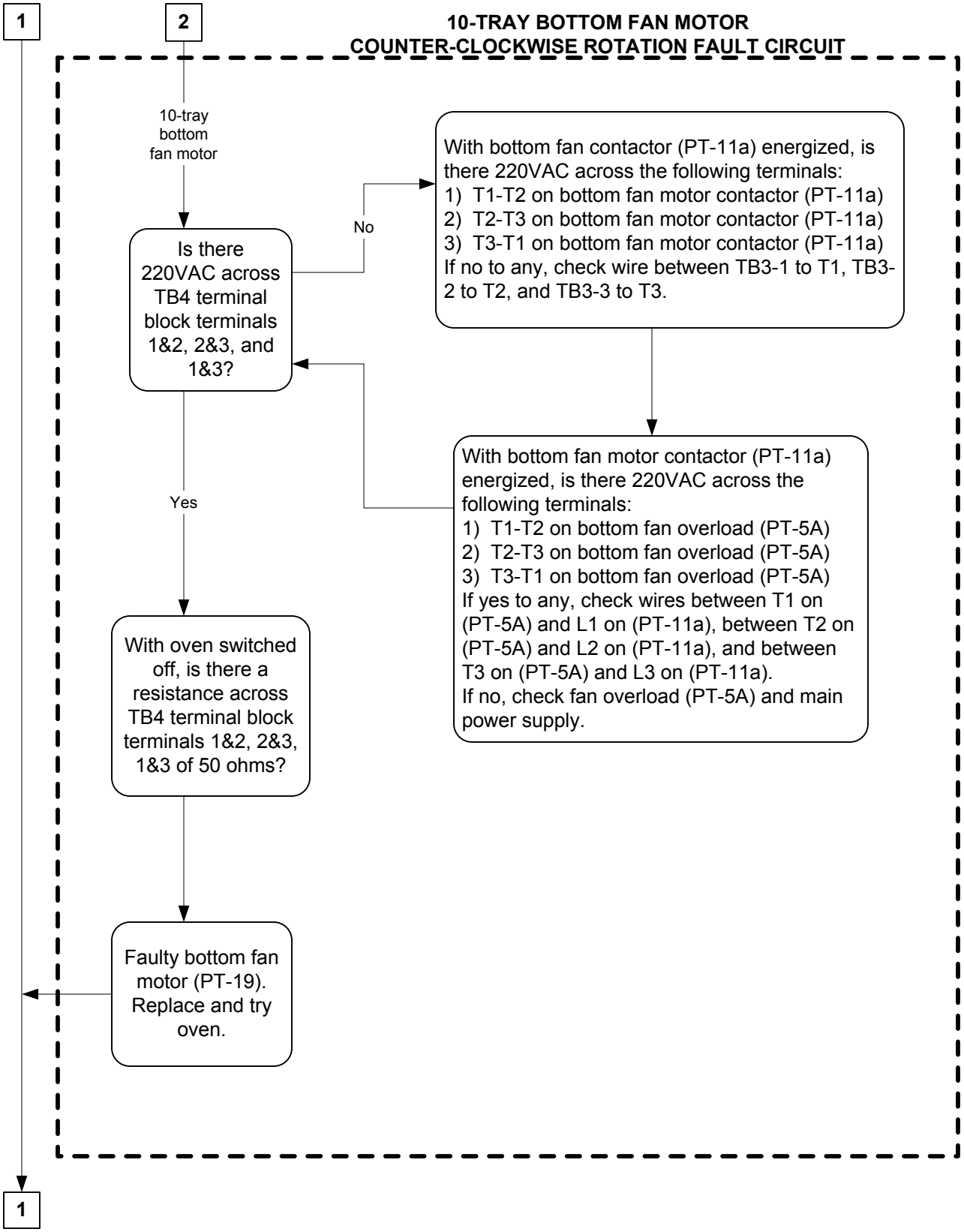
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
10-TRAY TOP FAN MOTOR
COUNTER-CLOCKWISE ROTATION FAULT CIRCUIT
Is there 24VDC across terminal N'2 on TB2 and PT-11C-A-21?
No
Check wire between PT-10C-A-22 and PT-11C-A-21. Check if contact 21-22 of PT-10C-A is closed when PT-10a is energized. If not, replace PT-10c.
Yes
Is there 24VDC across terminal N'2 on TB2 and PT-11C-A-22?
No
Check if contact 21-22 of PT-11C-A is closed when PT-11a is energized. If not, replace PT-11c.
Yes
Is there 24VDC across terminal N'2 on TB2 and PT-10a-A1?
No
Check wire from PT-11c-A-22 to PT-10a-A1.
Yes
Is there a circuit through the top fan motor contactor (PT-10a) coil of 65 ohms and bottom fan motor contactor (PT-11a) of 65 ohms?
No
Faulty top or bottom fan motor contactors (PT-10a, PT-11a). Change faulty contactor and retry oven.
10-tray bottom motor
1
2

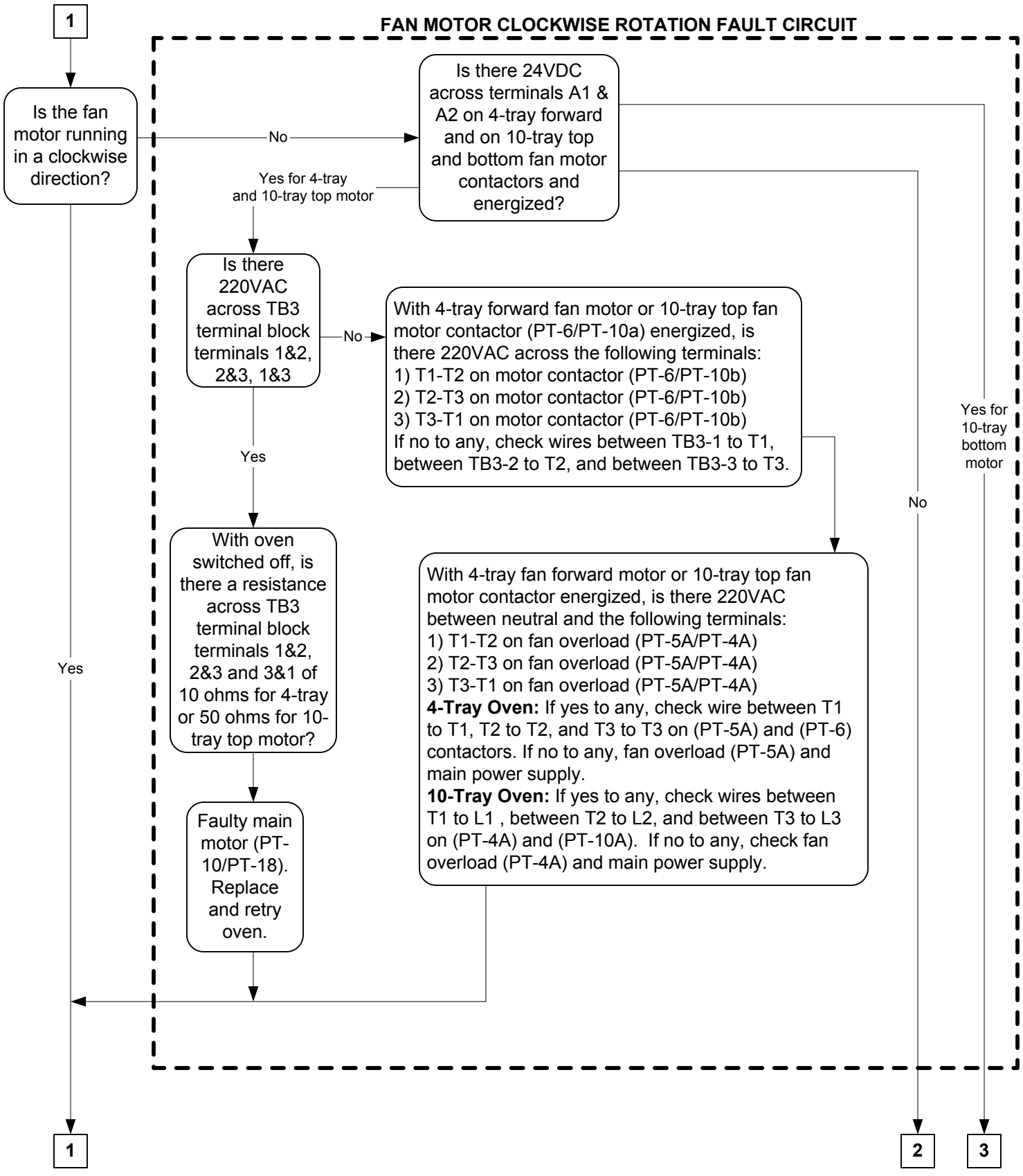
*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
10-TRAY BOTTOM FAN MOTOR
COUNTER-CLOCKWISE ROTATION FAULT CIRCUIT
10-tray bottom fan motor
Is there 220VAC across TB4 terminal block terminals 1&2, 2&3, and 1&3?
No
With bottom fan contactor (PT-11a) energized, is there 220VAC across the following terminals:
1) T1-T2 on bottom fan motor contactor (PT-11a)
2) T2-T3 on bottom fan motor contactor (PT-11a)
3) T3-T1 on bottom fan motor contactor (PT-11a)
If no to any, check wire between TB3-1 to T1, TB3-2 to T2, and TB3-3 to T3.
With bottom fan motor contactor (PT-11a) energized, is there 220VAC across the following terminals:
1) T1-T2 on bottom fan overload (PT-5A)
2) T2-T3 on bottom fan overload (PT-5A)
3) T3-T1 on bottom fan overload (PT-5A)
If yes to any, check wires between T1 on (PT-5A) and L1 on (PT-11a), between T2 on (PT-5A) and L2 on (PT-11a), and between T3 on (PT-5A) and L3 on (PT-11a).
If no, check fan overload (PT-5A) and main power supply.
Yes
With oven switched off, is there a resistance across TB4 terminal block terminals 1&2, 2&3, 1&3 of 50 ohms?
Faulty bottom fan motor (PT-19). Replace and try oven.
1

*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
FAN MOTOR CLOCKWISE ROTATION FAULT CIRCUIT
Is the fan motor running in a clockwise direction?
No
Yes
Is there 24VDC across terminals A1 & A2 on 4-tray forward and on 10-tray top and bottom fan motor contactors and energized?
Yes for 4-tray and 10-tray top motor
Yes for 10-tray bottom motor
No
Is there 220VAC across TB3 terminal block terminals 1&2, 2&3, 1&3
No
Yes
With 4-tray forward fan motor or 10-tray top fan motor contactor (PT-6/PT-10a) energized, is there 220VAC across the following terminals:
1) T1-T2 on motor contactor (PT-6/PT-10b)
2) T2-T3 on motor contactor (PT-6/PT-10b)
3) T3-T1 on motor contactor (PT-6/PT-10b)
If no to any, check wires between TB3-1 to T1, between TB3-2 to T2, and between TB3-3 to T3.
With oven switched off, is there a resistance across TB3 terminal block terminals 1&2, 2&3 and 3&1 of 10 ohms for 4-tray or 50 ohms for 10-tray top motor?
With 4-tray fan forward motor or 10-tray top fan motor contactor energized, is there 220VAC between neutral and the following terminals:
1) T1-T2 on fan overload (PT-5A/PT-4A)
2) T2-T3 on fan overload (PT-5A/PT-4A)
3) T3-T1 on fan overload (PT-5A/PT-4A)
4-Tray Oven: If yes to any, check wire between T1 to T1, T2 to T2, and T3 to T3 on (PT-5A) and (PT-6) contactors. If no to any, fan overload (PT-5A) and main power supply.
10-Tray Oven: If yes to any, check wires between T1 to L1 , between T2 to L2, and between T3 to L3 on (PT-4A) and (PT-10A). If no to any, check fan overload (PT-4A) and main power supply.
Faulty main motor (PT-10/PT-18). Replace and retry oven.
1
2
3

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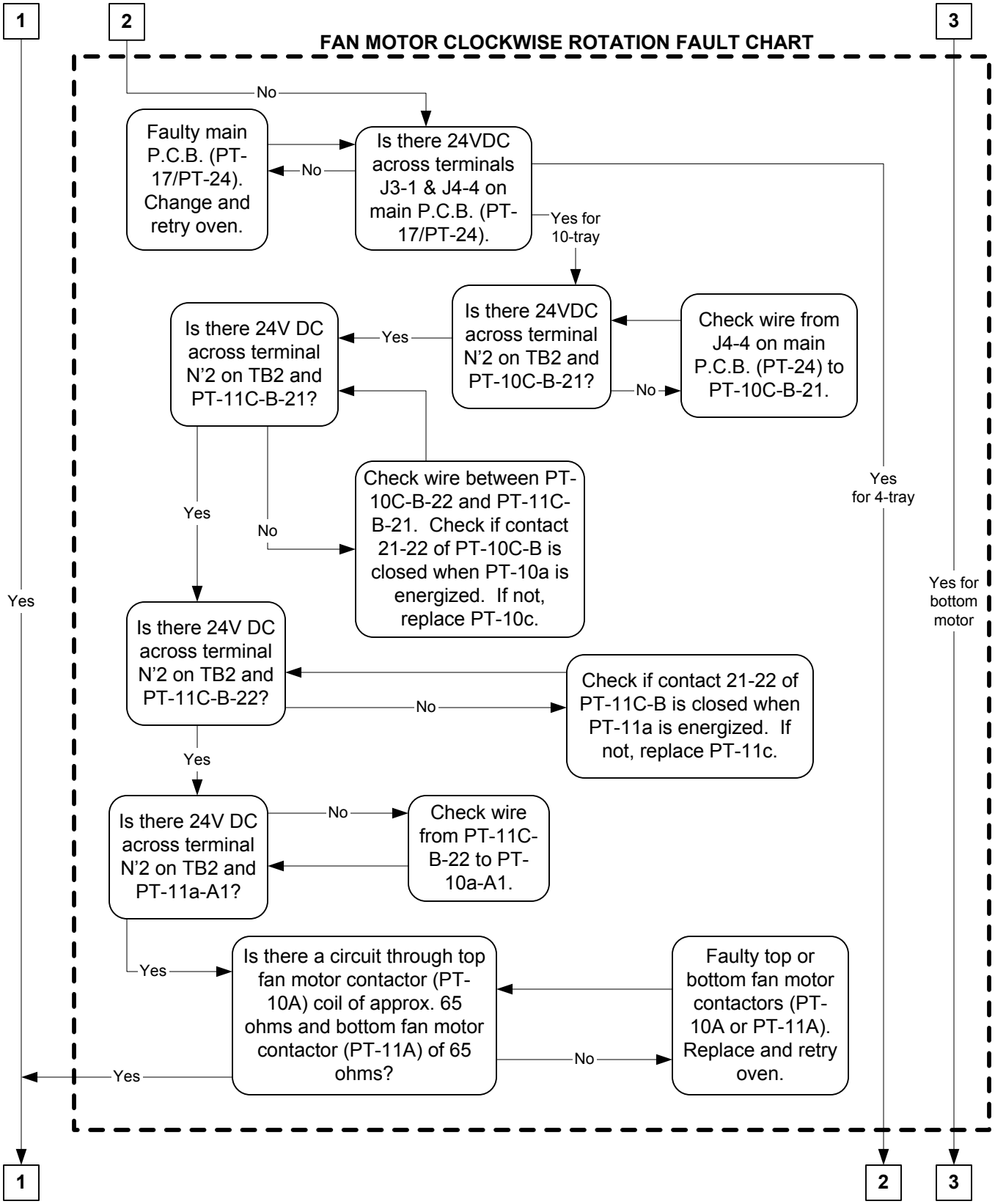
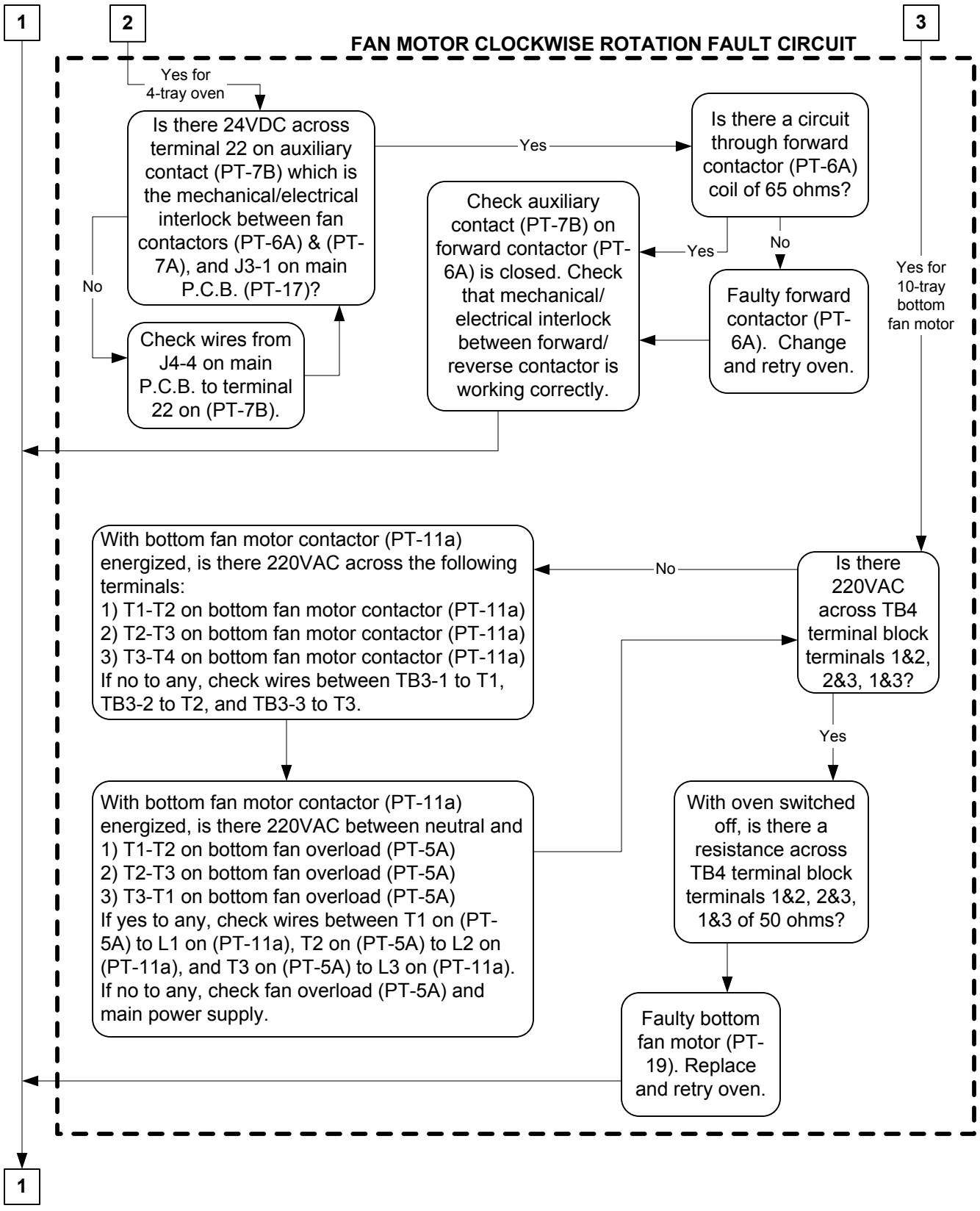
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
FAN MOTOR CLOCKWISE ROTATION FAULT CHART
No
Faulty main P.C.B. (PT-17/PT-24). Change and retry oven.
Is there 24VDC across terminals J3-1 & J4-4 on main P.C.B. (PT-17/PT-24).
No
Yes for 10-tray
Yes for 4-tray
Is there 24VDC across terminal N'2 on TB2 and PT-10C-B-21?
Check wire from J4-4 on main P.C.B. (PT-24) to PT-10C-B-21.
Yes
No
Is there 24V DC across terminal N'2 on TB2 and PT-11C-B-21?
Yes
No
Check wire between PT-10C-B-22 and PT-11C-B-21. Check if contact 21-22 of PT-10C-B is closed when PT-10a is energized. If not, replace PT-10c.
Yes
Yes for bottom motor
Is there 24V DC across terminal N'2 on TB2 and PT-11C-B-22?
Check if contact 21-22 of PT-11C-B is closed when PT-11a is energized. If not, replace PT-11c.
No
Yes
Is there 24V DC across terminal N'2 on TB2 and PT-11a-A1?
No
Check wire from PT-11C-B-22 to PT-10a-A1.
Yes
Is there a circuit through top fan motor contactor (PT-10A) coil of approx. 65 ohms and bottom fan motor contactor (PT-11A) of 65 ohms?
Faulty top or bottom fan motor contactors (PT-10A or PT-11A). Replace and retry oven.
No
Yes
1
2
3

*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
FAN MOTOR CLOCKWISE ROTATION FAULT CIRCUIT
Yes for 4-tray oven
Is there 24VDC across terminal 22 on auxiliary contact (PT-7B) which is the mechanical/electrical interlock between fan contactors (PT-6A) & (PT-7A), and J3-1 on main P.C.B. (PT-17)?
Yes
Is there a circuit through forward contactor (PT-6A) coil of 65 ohms?
No
Check wires from J4-4 on main P.C.B. to terminal 22 on (PT-7B).
Check auxiliary contact (PT-7B) on forward contactor (PT-6A) is closed. Check that mechanical/ electrical interlock between forward/ reverse contactor is working correctly.
Yes
No
Faulty forward contactor (PT-6A). Change and retry oven.
Yes for 10-tray bottom fan motor
With bottom fan motor contactor (PT-11a) energized, is there 220VAC across the following terminals:
1) T1-T2 on bottom fan motor contactor (PT-11a)
2) T2-T3 on bottom fan motor contactor (PT-11a)
3) T3-T4 on bottom fan motor contactor (PT-11a)
If no to any, check wires between TB3-1 to T1, TB3-2 to T2, and TB3-3 to T3.
No
Is there 220VAC across TB4 terminal block terminals 1&2, 2&3, 1&3?
Yes
With bottom fan motor contactor (PT-11a) energized, is there 220VAC between neutral and
1) T1-T2 on bottom fan overload (PT-5A)
2) T2-T3 on bottom fan overload (PT-5A)
3) T3-T1 on bottom fan overload (PT-5A)
If yes to any, check wires between T1 on (PT-5A) to L1 on (PT-11a), T2 on (PT-5A) to L2 on (PT-11a), and T3 on (PT-5A) to L3 on (PT-11a). If no to any, check fan overload (PT-5A) and main power supply.
With oven switched off, is there a resistance across TB4 terminal block terminals 1&2, 2&3, 1&3 of 50 ohms?
Faulty bottom fan motor (PT-19). Replace and retry oven.
1

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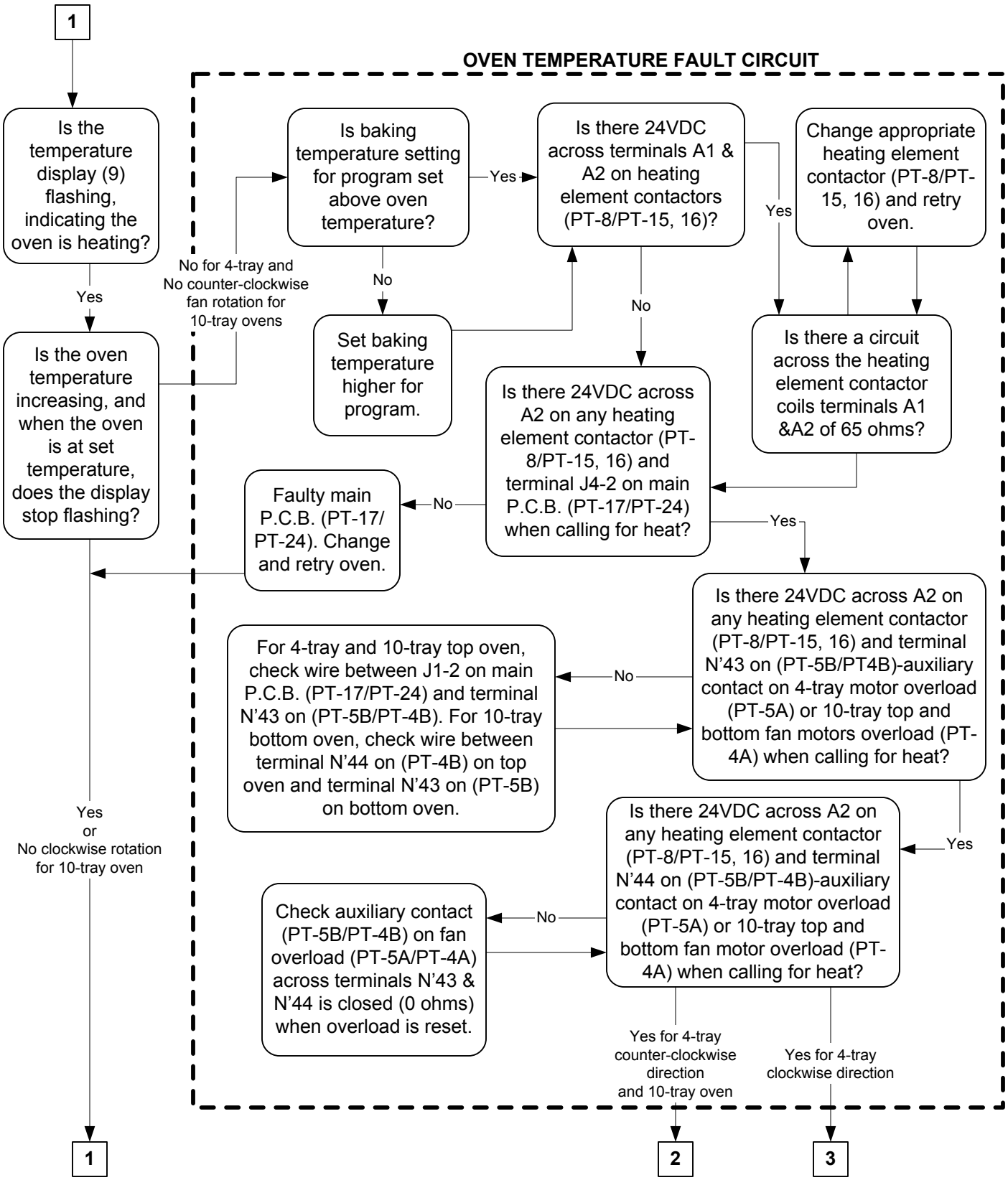
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
OVEN TEMPERATURE FAULT CIRCUIT
Is the temperature display (9) flashing, indicating the oven is heating?
Yes
Is the oven temperature increasing, and when the oven is at set temperature, does the display stop flashing?
Yes or No clockwise rotation for 10-tray oven
1
No for 4-tray and No counter-clockwise fan rotation for 10-tray ovens
Is baking temperature setting for program set above oven temperature?
Yes
No
Set baking temperature higher for program.
Is there 24VDC across terminals A1 & A2 on heating element contactors (PT-8/PT-15, 16)?
Yes
Change appropriate heating element contactor (PT-8/PT-15, 16) and retry oven.
No
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal J4-2 on main P.C.B. (PT-17/PT-24) when calling for heat?
No
Faulty main P.C.B. (PT-17/ PT-24). Change and retry oven.
Yes
Is there a circuit across the heating element contactor coils terminals A1 &A2 of 65 ohms?
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'43 on (PT-5B/PT4B)-auxiliary contact on 4-tray motor overload (PT-5A) or 10-tray top and bottom fan motors overload (PT-4A) when calling for heat?
No
For 4-tray and 10-tray top oven, check wire between J1-2 on main P.C.B. (PT-17/PT-24) and terminal N'43 on (PT-5B/PT-4B). For 10-tray bottom oven, check wire between terminal N'44 on (PT-4B) on top oven and terminal N'43 on (PT-5B) on bottom oven.
Yes
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'44 on (PT-5B/PT-4B)-auxiliary contact on 4-tray motor overload (PT-5A) or 10-tray top and bottom fan motor overload (PT-4A) when calling for heat?
No
Check auxiliary contact (PT-5B/PT-4B) on fan overload (PT-5A/PT-4A) across terminals N'43 & N'44 is closed (0 ohms) when overload is reset.
Yes for 4-tray counter-clockwise direction and 10-tray oven
2
Yes for 4-tray clockwise direction
3

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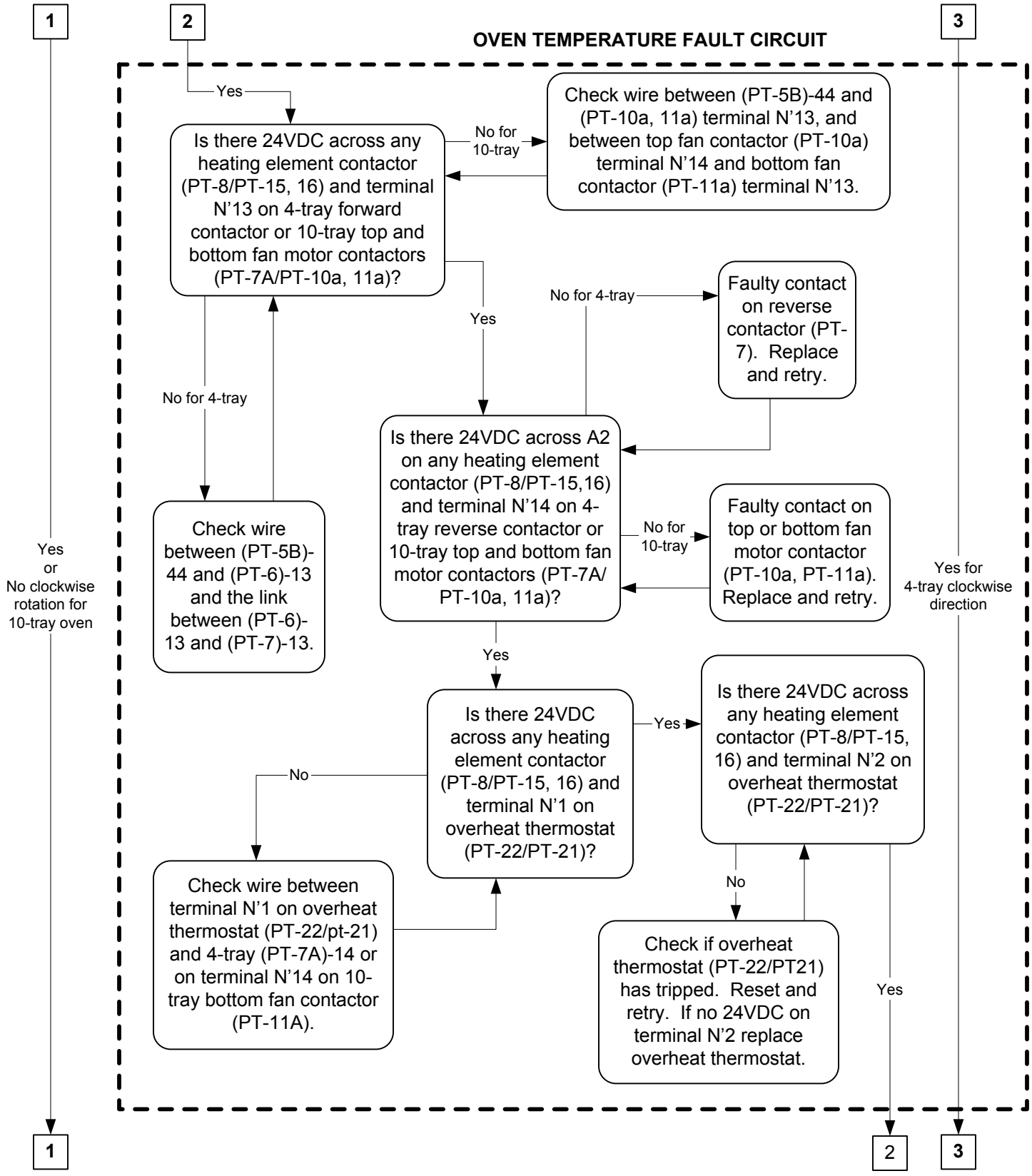
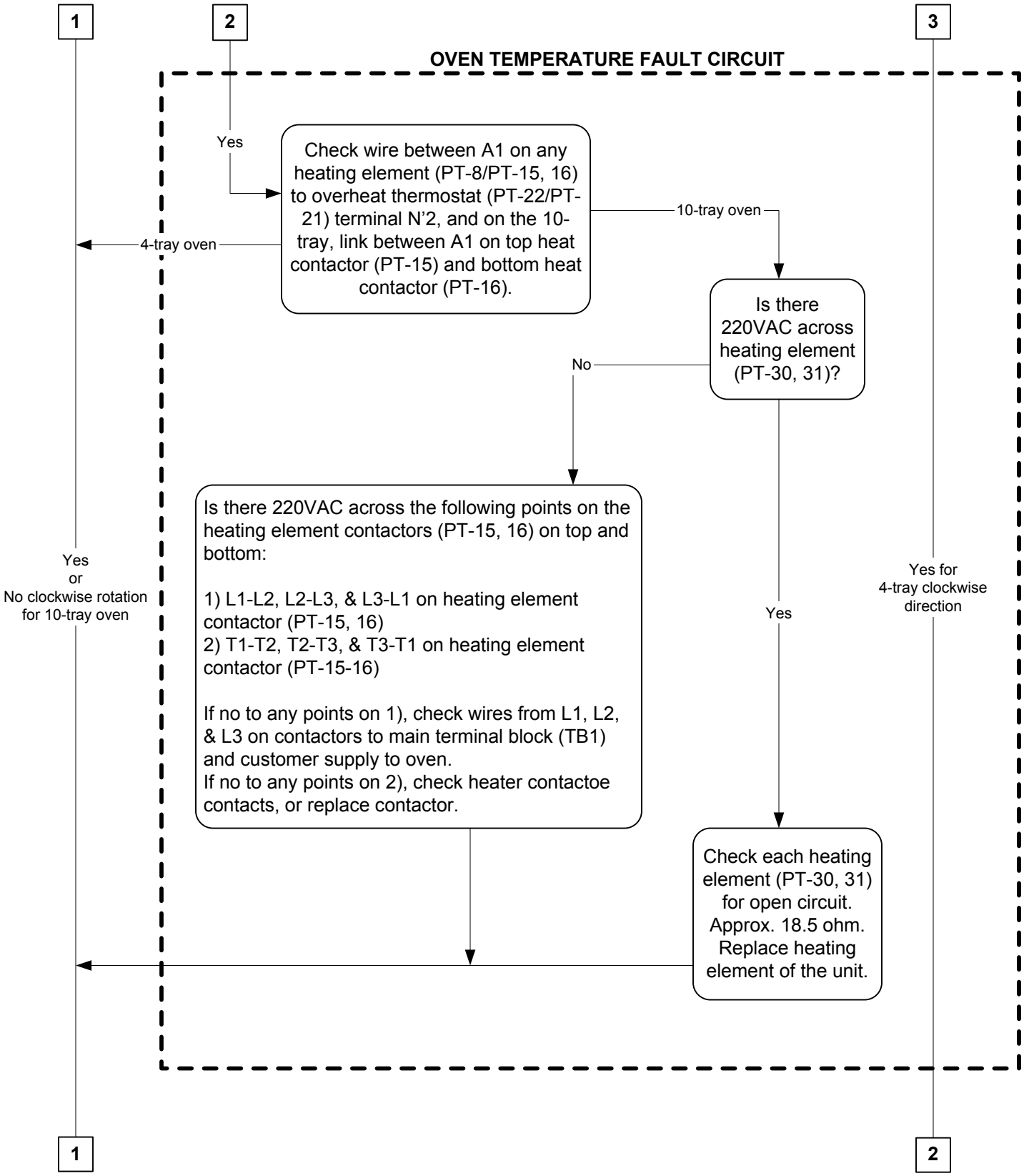
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
OVEN TEMPERATURE FAULT CIRCUIT
Yes
Is there 24VDC across any heating element contactor (PT-8/PT-15, 16) and terminal N'13 on 4-tray forward contactor or 10-tray top and bottom fan motor contactors (PT-7A/PT-10a, 11a)?
No for 10-tray
Check wire between (PT-5B)-44 and (PT-10a, 11a) terminal N'13, and between top fan contactor (PT-10a) terminal N'14 and bottom fan contactor (PT-11a) terminal N'13.
Yes
No for 4-tray
Faulty contact on reverse contactor (PT-7). Replace and retry.
No for 4-tray
Check wire between (PT-5B)-44 and (PT-6)-13 and the link between (PT-6)-13 and (PT-7)-13.
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15,16) and terminal N'14 on 4-tray reverse contactor or 10-tray top and bottom fan motor contactors (PT-7A/ PT-10a, 11a)?
No for 10-tray
Faulty contact on top or bottom fan motor contactor (PT-10a, PT-11a). Replace and retry.
Yes
Is there 24VDC across any heating element contactor (PT-8/PT-15, 16) and terminal N'1 on overheat thermostat (PT-22/PT-21)?
Yes
Is there 24VDC across any heating element contactor (PT-8/PT-15, 16) and terminal N'2 on overheat thermostat (PT-22/PT-21)?
No
Check wire between terminal N'1 on overheat thermostat (PT-22/pt-21) and 4-tray (PT-7A)-14 or on terminal N'14 on 10-tray bottom fan contactor (PT-11A).
No
Check if overheat thermostat (PT-22/PT21) has tripped. Reset and retry. If no 24VDC on terminal N'2 replace overheat thermostat.
Yes
Yes or No clockwise rotation for 10-tray oven
Yes for 4-tray clockwise direction
1
2
3

*Note: Part (PT) numbers are indicated in parentheses; 4-tray oven PT numbers are listed first, then 10-tray oven PT numbers unless otherwise indicated.

4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
OVEN TEMPERATURE FAULT CIRCUIT
Yes
Check wire between A1 on any heating element (PT-8/PT-15, 16) to overheat thermostat (PT-22/PT-21) terminal N'2, and on the 10-tray, link between A1 on top heat contactor (PT-15) and bottom heat contactor (PT-16).
10-tray oven
4-tray oven
Is there 220VAC across heating element (PT-30, 31)?
No
Is there 220VAC across the following points on the heating element contactors (PT-15, 16) on top and bottom:
1) L1-L2, L2-L3, & L3-L1 on heating element contactor (PT-15, 16)
2) T1-T2, T2-T3, & T3-T1 on heating element contactor (PT-15-16)
If no to any points on 1), check wires from L1, L2, & L3 on contactors to main terminal block (TB1) and customer supply to oven.
If no to any points on 2), check heater contactoe contacts, or replace contactor.
Yes
Yes
or
No clockwise rotation for 10-tray oven
Yes for 4-tray clockwise direction
Check each heating element (PT-30, 31) for open circuit. Approx. 18.5 ohm. Replace heating element of the unit.
1
2

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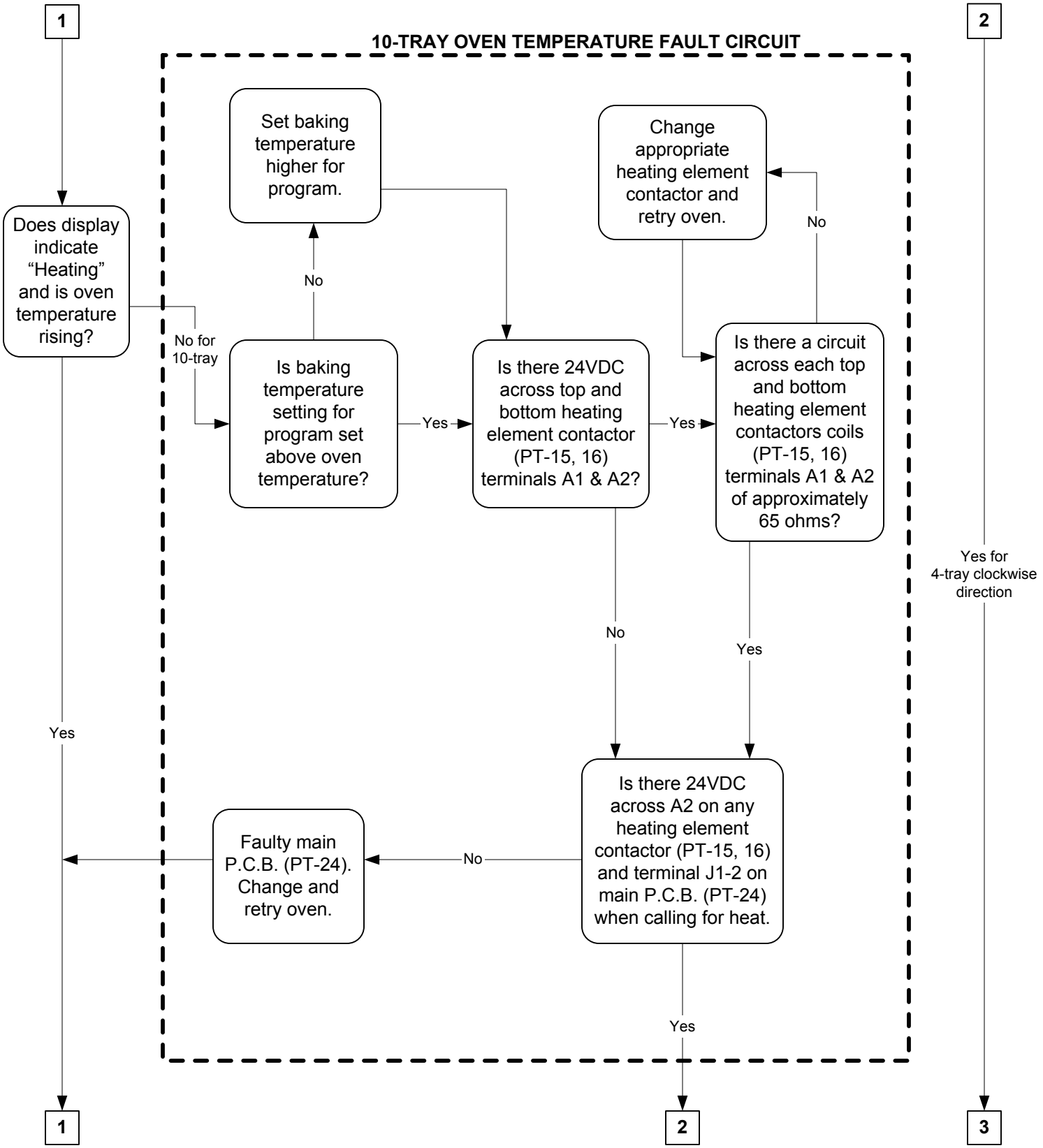
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
10-TRAY OVEN TEMPERATURE FAULT CIRCUIT
Set baking temperature higher for program.
Change appropriate heating element contactor and retry oven.
Does display indicate "Heating" and is oven temperature rising?
No
No
No for 10-tray
Is baking temperature setting for program set above oven temperature?
Yes
Is there 24VDC across top and bottom heating element contactor (PT-15, 16) terminals A1 & A2?
Yes
Is there a circuit across each top and bottom heating element contactors coils (PT-15, 16) terminals A1 & A2 of approximately 65 ohms?
Yes for 4-tray clockwise direction
No
Yes
Yes
Is there 24VDC across A2 on any heating element contactor (PT-15, 16) and terminal J1-2 on main P.C.B. (PT-24) when calling for heat.
No
Faulty main P.C.B. (PT-24). Change and retry oven.
Yes
1
2
3

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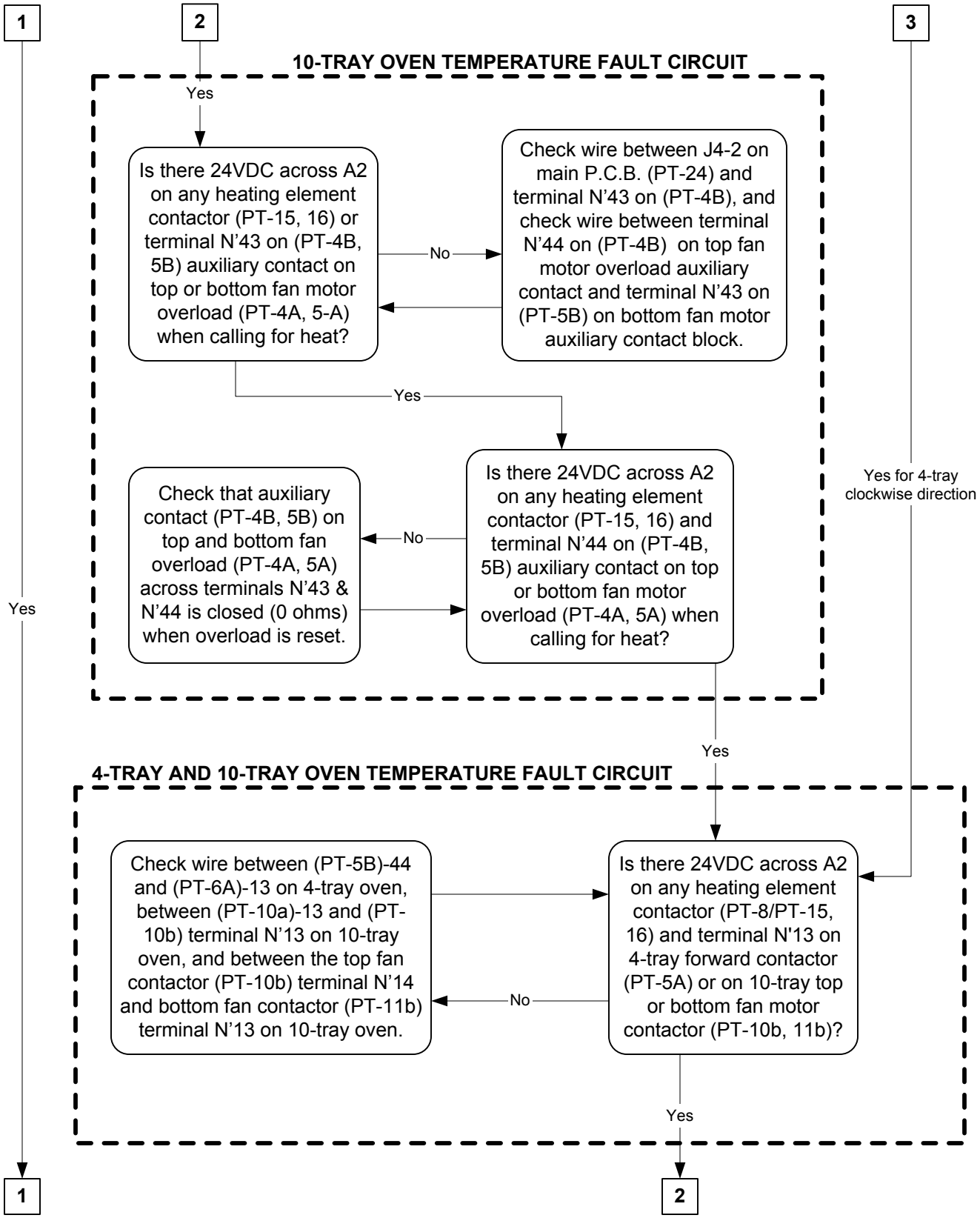
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
3
10-TRAY OVEN TEMPERATURE FAULT CIRCUIT
Yes
Is there 24VDC across A2 on any heating element contactor (PT-15, 16) or terminal N'43 on (PT-4B, 5B) auxiliary contact on top or bottom fan motor overload (PT-4A, 5-A) when calling for heat?
No
Check wire between J4-2 on main P.C.B. (PT-24) and terminal N'43 on (PT-4B), and check wire between terminal N'44 on (PT-4B) on top fan motor overload auxiliary contact and terminal N'43 on (PT-5B) on bottom fan motor auxiliary contact block.
Yes
Is there 24VDC across A2 on any heating element contactor (PT-15, 16) and terminal N'44 on (PT-4B, 5B) auxiliary contact on top or bottom fan motor overload (PT-4A, 5A) when calling for heat?
No
Check that auxiliary contact (PT-4B, 5B) on top and bottom fan overload (PT-4A, 5A) across terminals N'43 & N'44 is closed (0 ohms) when overload is reset.
Yes for 4-tray clockwise direction
Yes
Yes
4-TRAY AND 10-TRAY OVEN TEMPERATURE FAULT CIRCUIT
Check wire between (PT-5B)-44 and (PT-6A)-13 on 4-tray oven, between (PT-10a)-13 and (PT-10b) terminal N'13 on 10-tray oven, and between the top fan contactor (PT-10b) terminal N'14 and bottom fan contactor (PT-11b) terminal N'13 on 10-tray oven.
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'13 on 4-tray forward contactor (PT-5A) or on 10-tray top or bottom fan motor contactor (PT-10b, 11b)?
No
Yes
1
2

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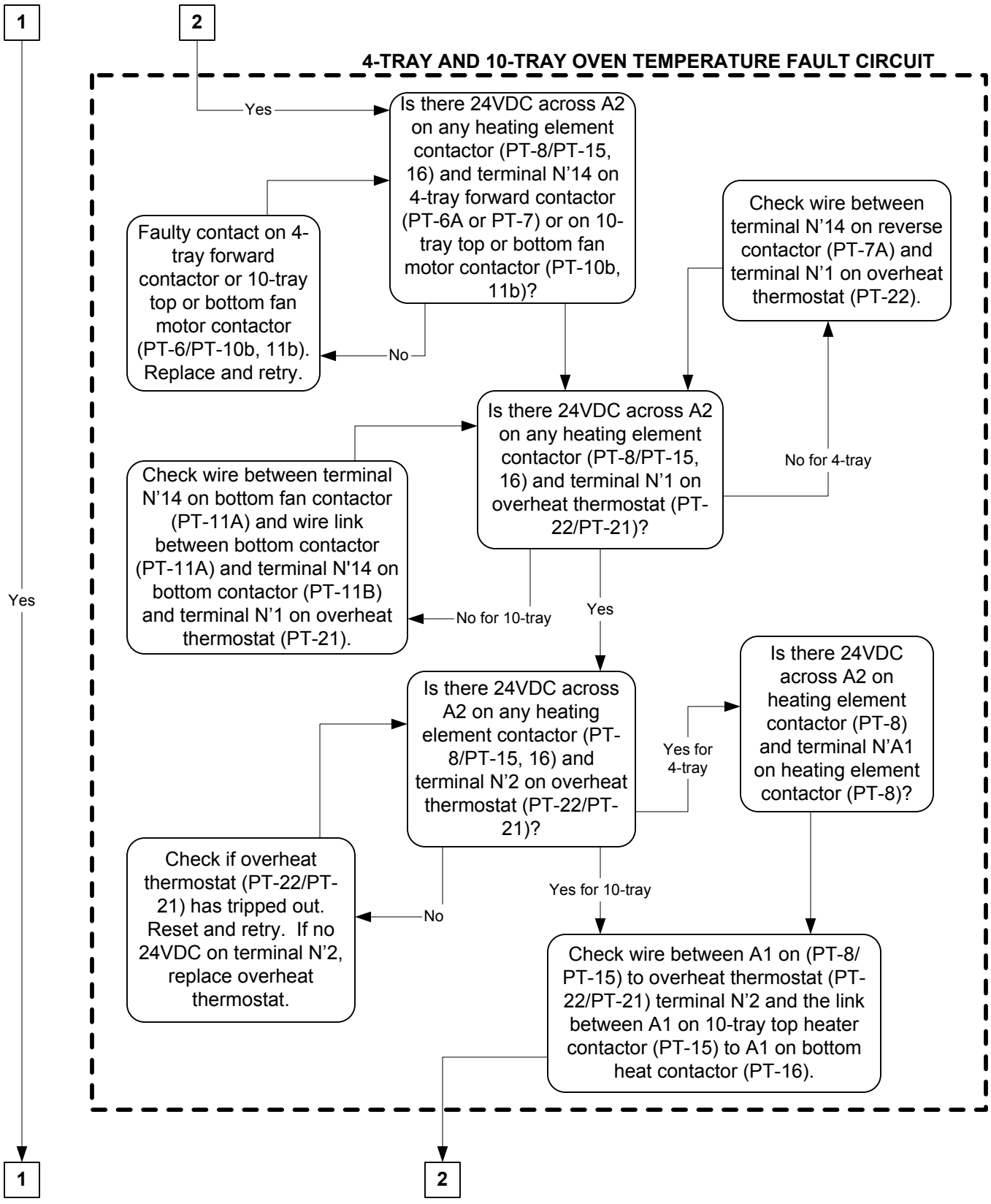
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
4-TRAY AND 10-TRAY OVEN TEMPERATURE FAULT CIRCUIT
Yes
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'14 on 4-tray forward contactor (PT-6A or PT-7) or on 10-tray top or bottom fan motor contactor (PT-10b, 11b)?
Faulty contact on 4-tray forward contactor or 10-tray top or bottom fan motor contactor (PT-6/PT-10b, 11b). Replace and retry.
No
Check wire between terminal N'14 on reverse contactor (PT-7A) and terminal N'1 on overheat thermostat (PT-22).
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'1 on overheat thermostat (PT-22/PT-21)?
No for 4-tray
Check wire between terminal N'14 on bottom fan contactor (PT-11A) and wire link between bottom contactor (PT-11A) and terminal N'14 on bottom contactor (PT-11B) and terminal N'1 on overheat thermostat (PT-21).
No for 10-tray
Yes
Yes
Is there 24VDC across A2 on any heating element contactor (PT-8/PT-15, 16) and terminal N'2 on overheat thermostat (PT-22/PT-21)?
Yes for 4-tray
Is there 24VDC across A2 on heating element contactor (PT-8) and terminal N'A1 on heating element contactor (PT-8)?
Check if overheat thermostat (PT-22/PT-21) has tripped out. Reset and retry. If no 24VDC on terminal N'2, replace overheat thermostat.
No
Yes for 10-tray
Check wire between A1 on (PT-8/PT-15) to overheat thermostat (PT-22/PT-21) terminal N'2 and the link between A1 on 10-tray top heater contactor (PT-15) to A1 on bottom heat contactor (PT-16).
Yes
1
2

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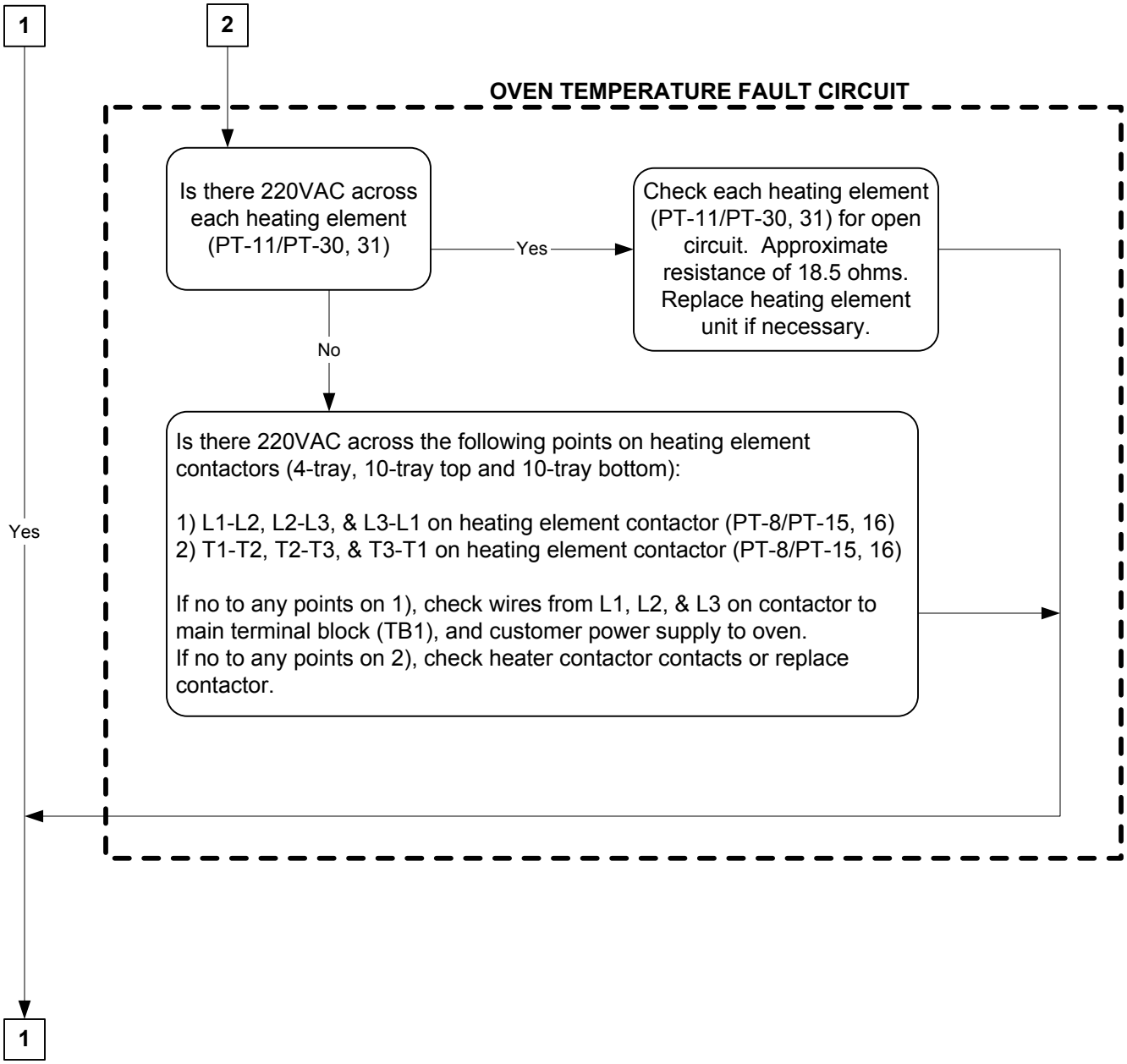
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
2
OVEN TEMPERATURE FAULT CIRCUIT
Is there 220VAC across each heating element (PT-11/PT-30, 31)
Yes
Check each heating element (PT-11/PT-30, 31) for open circuit. Approximate resistance of 18.5 ohms. Replace heating element unit if necessary.
No
Is there 220VAC across the following points on heating element contactors (4-tray, 10-tray top and 10-tray bottom):
1) L1-L2, L2-L3, & L3-L1 on heating element contactor (PT-8/PT-15, 16)
2) T1-T2, T2-T3, & T3-T1 on heating element contactor (PT-8/PT-15, 16)
If no to any points on 1), check wires from L1, L2, & L3 on contactor to main terminal block (TB1), and customer power supply to oven.
If no to any points on 2), check heater contactor contacts or replace contactor.
Yes
1

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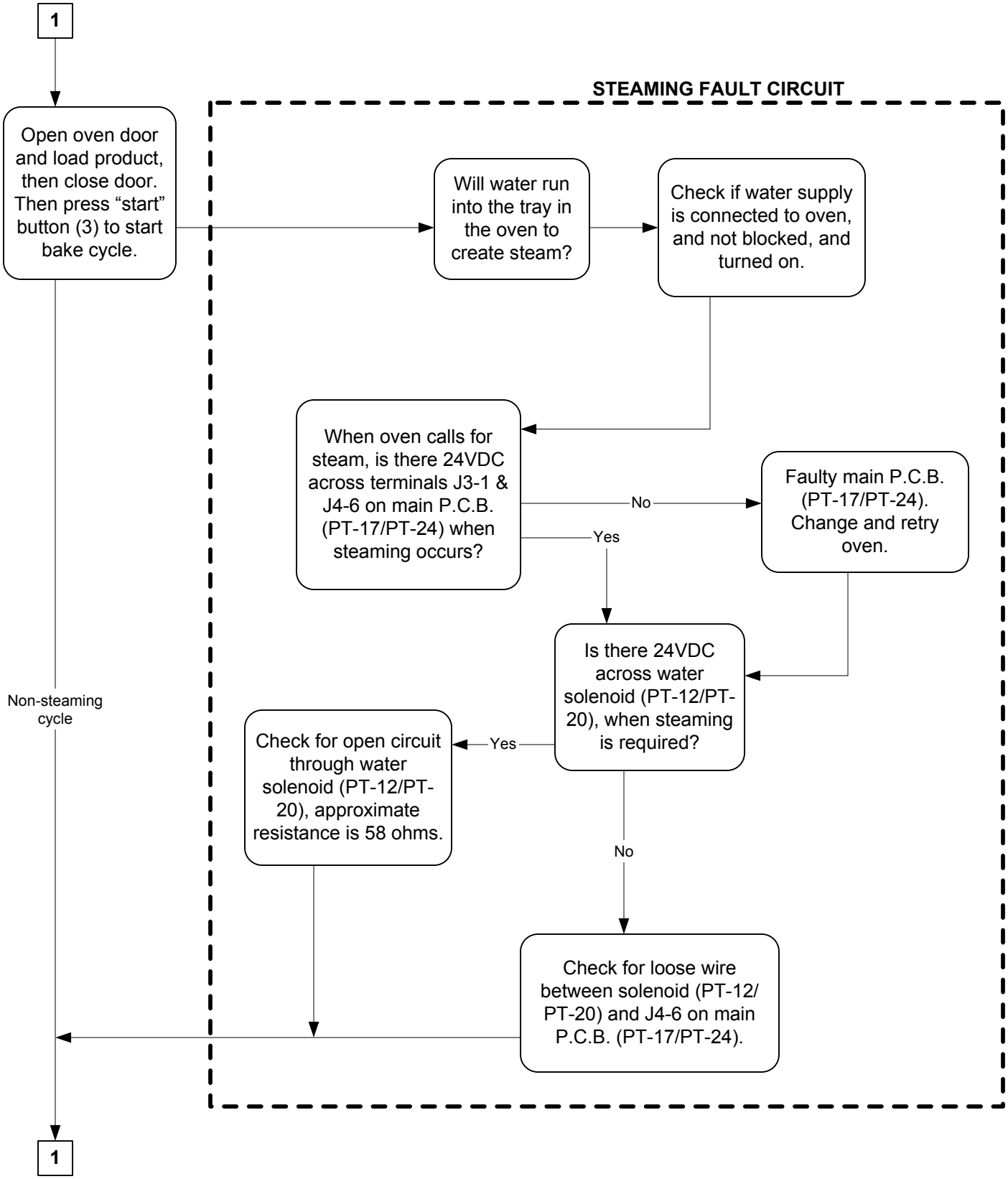
4 TRAY & 10 TRAY SMARTBAKE FAULT ANALYSIS CHART


1
STEAMING FAULT CIRCUIT
Open oven door and load product, then close door. Then press “start” button (3) to start bake cycle.
Will water run into the tray in the oven to create steam?
Check if water supply is connected to oven, and not blocked, and turned on.
When oven calls for steam, is there 24VDC across terminals J3-1 & J4-6 on main P.C.B. (PT-17/PT-24) when steaming occurs?
No
Faulty main P.C.B. (PT-17/PT-24). Change and retry oven.
Yes
Is there 24VDC across water solenoid (PT-12/PT-20), when steaming is required?
Yes
Check for open circuit through water solenoid (PT-12/PT-20), approximate resistance is 58 ohms.
No
Check for loose wire between solenoid (PT-12/PT-20) and J4-6 on main P.C.B. (PT-17/PT-24).
Non-steaming cycle
1

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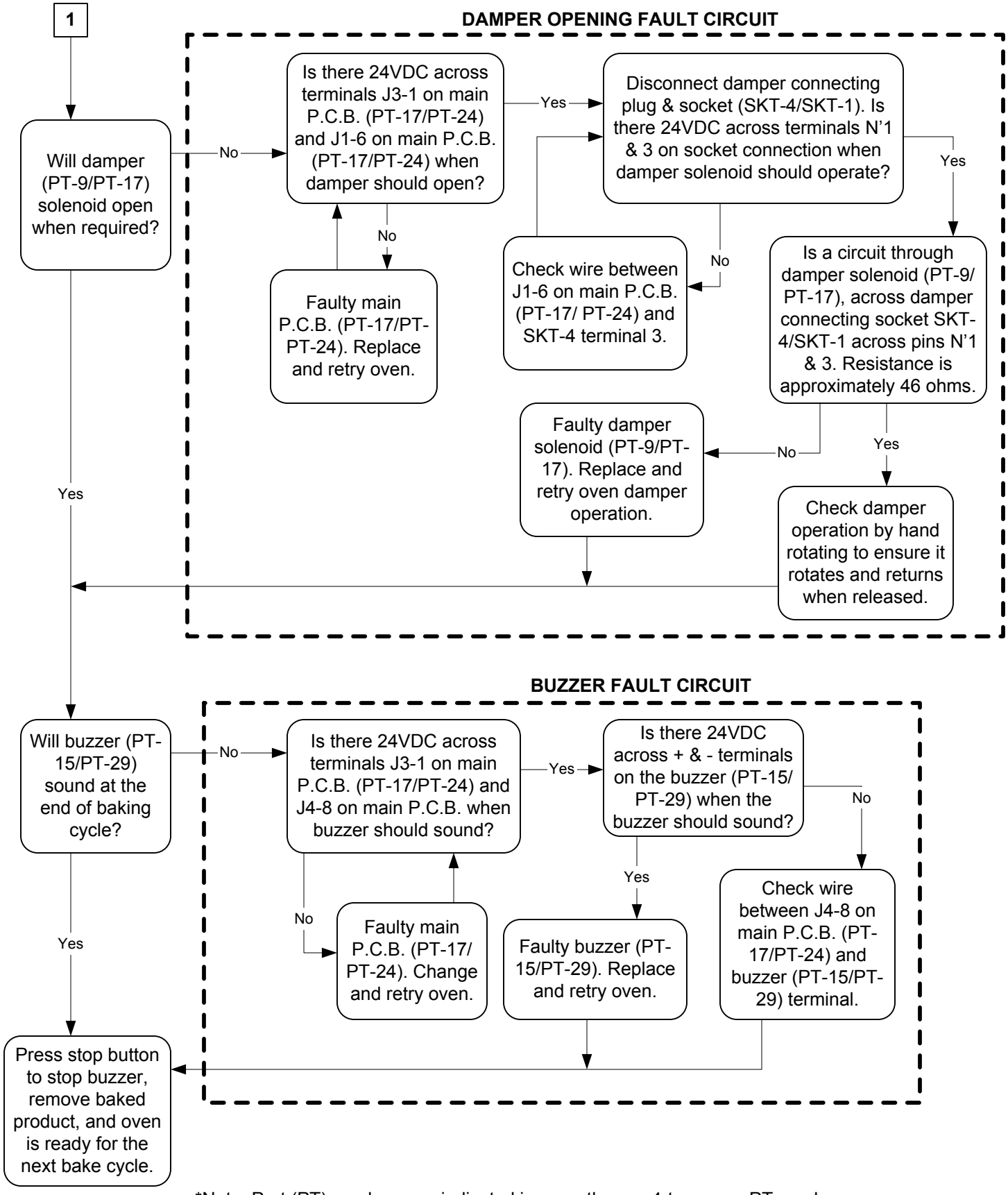
1
DAMPER OPENING FAULT CIRCUIT
Will damper (PT-9/PT-17) solenoid open when required?
No
Is there 24VDC across terminals J3-1 on main P.C.B. (PT-17/PT-24) and J1-6 on main P.C.B. (PT-17/PT-24) when damper should open?
Yes
Disconnect damper connecting plug & socket (SKT-4/SKT-1). Is there 24VDC across terminals N'1 & 3 on socket connection when damper solenoid should operate?
Yes
No
Faulty main P.C.B. (PT-17/PT-PT-24). Replace and retry oven.
No
Check wire between J1-6 on main P.C.B. (PT-17/ PT-24) and SKT-4 terminal 3.
Is a circuit through damper solenoid (PT-9/ PT-17), across damper connecting socket SKT-4/SKT-1 across pins N'1 & 3. Resistance is approximately 46 ohms.
No
Faulty damper solenoid (PT-9/PT-17). Replace and retry oven damper operation.
Yes
Check damper operation by hand rotating to ensure it rotates and returns when released.
Yes
BUZZER FAULT CIRCUIT
Will buzzer (PT-15/PT-29) sound at the end of baking cycle?
No
Is there 24VDC across terminals J3-1 on main P.C.B. (PT-17/PT-24) and J4-8 on main P.C.B. when buzzer should sound?
Yes
Is there 24VDC across + & - terminals on the buzzer (PT-15/ PT-29) when the buzzer should sound?
No
Yes
No
Faulty main P.C.B. (PT-17/ PT-24). Change and retry oven.
Faulty buzzer (PT-15/PT-29). Replace and retry oven.
Check wire between J4-8 on main P.C.B. (PT-17/PT-24) and buzzer (PT-15/PT-29) terminal.
Yes
Press stop button to stop buzzer, remove baked product, and oven is ready for the next bake cycle.

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